DEC 19 1923
Medical Library

This Issue Exceeds 80,000 Copies

# THE JOURNAL

OF THE

*American Medical Association*

Annual Subscription, $6.00 | PUBLISHED WEEKLY | Single Copies, 20 Cents

VOLUME 81, No. 20 | 535 North Dearborn Street, CHICAGO, ILL. | NOVEMBER 17, 1923

## CONTENTS AND SUBJECT INDEX

The Significance of a Serohemorrhagic or Hemorrhagic Discharge from the Nipple. Edwin M. Miller, M.D., and Dean Lewis, M.D., Chicago.....1651

Amebic Infection in Washington. G. A. Dowling, M.D., Seattle.....1657
Discussed by Drs. Garrett, Wright, Yeomans, Pennington and Dowling.

Relation of Pruritus of Anus to Chronic Diseases of Abdominal and Pelvic Viscera. J. F. Montague, M.D., New York.....1661
Discussed by Drs. Beach, Yeomans, Rose, Whiffen, Simon, Pilcher and Montague.

Dental Impactions and Their Sequelae. E. F. Tholen, M.D., Los Angeles.1664
Discussed by Drs. Potts, Fontaine and Tuckey.

Changes in Tooth Structure Resulting From Deficient Diets. J. A. Marshall, D.D.S., San Francisco.....1665
Discussed by Drs. Potts, Clark and Marshall.

Chemical Solvents Used in Dissolving Foreign Substances in Urinary Bladder. H. L. Morris, M.D., and C. I. Owen, M.D., Detroit.....1667
Discussed by Drs. Goldstein, Stevens, Kretschmer, Braasch, Hamer, Lyons and Morris.

The Time Element in Gallstone Formation. A. L. Cameron, M.D., Minneapolis.....1671

Roentgen-Ray Intoxication. S. L. Warren, M.D., San Francisco, and G. H. Whipple, M.D., Rochester, N. Y...1673

Urologic Phase of Pernicious Anemia. Ira R. Sisk, M.D., Madison, Wis..1675

Pyorrhea Alveolaris. Ivan C. Hall, Ph.D., Berkeley, Calif.....1676

The Age of Graduation of Medical Students. Theodore Hough, Charlottesville, Va.....1679

Use of Microphonic Stethoscope in Demonstration of Fetal Heart Tones. F. H. Falls, M.D., and A. C. Rockwood, M.S., Iowa City.....1683

Ophthalmia Myiasis Externa, Due to Larvae of Oestrus Ovis. H. H. Stark, M.D., El Paso, Texas.....1684

Filaria Loa: Report of Case of Removal from the Subconjunctival Tissues. J. W. Kimberlin, M.D., Kansas City, Mo.....1685
Papers of Drs. Stark and Kimberlin discussed by Drs. Glaser, Lichtenberg Barkan, Moulton, Stark and Kimberlin.

Postinfantile Tetany: Report of Three Cases. E. T. Gibson, M.D., Kansas City, Mo.....1687

SPECIAL ARTICLE

Epidemic (Lethargic) Encephalitis and Allied Conditions. Simon Flexner, M.D., New York (to be continued) .....1688

EDITORIALS

Medical Publicity.....1694

The Etiology of Pemphigus.....1695

The Pineal Body.....1696

Erythremia .....1696

CURRENT COMMENT

Some Effects of Therapeutic Application of External Heat.....1697

The Common Cold.....1697

Rhythmic Movements and Tonus in the Intestine.....1697

(Subject Index on next page)

Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on June 14, 1918. If undeliverable, return postage is guaranteed

Copyright, 1923, by the American Medical Association

NEXT ANNUAL SESSION, CHICAGO, MAY 19-23, 1924.

*A New and Magnificent Work*

**Bickham's**

**Operative Surgery**

**In Six Volumes, Totalling About 5400 Pages, with 6375 Illustrations**

**SAUNDERS, *Publishers***

**SEE PAGE 3**

## SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "T," Therapeutics; "MI," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics.


Abortion, quinin in....ab-1733
Achlorhydria in arthritis....ab-1724
Achylia gastrica, functional....ab-1729
Advertising, medical publicity....E-1694
Amebiasis in Washington....*1657
Amputation of forearm....ab-1729
Anaphylaxis, blood in....ab-1728
Anemia, hemolytic....ab-1734
pernicious, urologic phase of....*1675
Anesthesia, epidural injections....ab-1727
chloroform anesthesia, pathology of...ab-1732
sacrolumbar....ab-1733
Ankylosis, treatment....ab-1727
Anoxemia causes hyperpnea....ab-1721
Arsphenamin, retention of....ab-1731
Artery, coronary, and purin derivatives.ab-1731
coronary, diseases of....ab-1730
Arthritis defo.mans, syphilitic....ab-1727
achlorhydria in....ab-1724
Australian X disease....*1688
Bacillus prodigiosus, irradiation of....ab-1731
Bile acids, secretion of....ab-1731
Bismuth line on gums....ab-1732
Bladder, bone sequestrum in....ab-1733
fistulas from hairpin in....ab-1728
foreign body in....*1667
regurgitation....ab-1722
Blood nitrogen and muscular exertion..ab-1728
in pregnancy and new-born....ab-1719
plasma, inorganic elements of....ab-1720
platelets in hemoclastic crisis....ab-1728
studies after pyloric obstruction....ab-1721
transfusion through umbilical vein...ab-1723
vessels, action of hydrogen ions on...ab-1730
Bones, diagnosis of sarcoma in....ab-1726
**Book Notices....1715**
**Books Received....Adv. page 28**
Breast, histological examination during operation on....ab-1732
significance of discharge from nipple...*1651
Bronchitis, spirochetal....ab-1729
spirochetal, in Venezuela....ab-1729
Bucaramanga epidemic....ab-1729
Cancer transplantation....ab-1731
mortality from....C-1711
operative treatment of....ab-1724
Cecum, volvulus of....ab-1734
Cerebrospinal fluid, sugar in....ab-1722
Children, weakly, roentgen irradiation of....ab-1731
Cholesterol and suprarenals....ab-1728
Chorio-epithelioma....ab-1734
Colds, the common cold....E-1697
Colon obstruction, cecostomy for....ab-1724
Contracture, anastomosis of facial nerve in....ab-1730
**Correspondence....1711**
Cryoscopy and renal diseases....1707
Cystinuria, familial....ab-1721
Deaf-mutism, hereditary....1708
Deafness from syphilis....ab-1723
**Deaths....1709**
Decerebrate rigidity....ab-1726
Diabetes, rarity of, in Croatia....ab-1732
alkali in....1713
effect of fasting and dieting on....ab-1721
insulin in....ab-1721
Diets, deficient, and teeth....*1665, ab-1730
Diphtheria, serum phenomena and prognosis in....ab-1724
Diploma mill investigations in Connecticut....1714
"Divine Healer"....C-1711
Echinococcosis of ovary and tube....ab-1733
Electrocardiogram, P peak in....ab-1731
Encephalitis....*1688
statistics of sequelae of....1708
Endocarditis, differentiation of tuberculosis from....ab-1727
Endometrial tissue, autotransplantation of....ab-1719
Eosin to reenforce radiotherapy....ab-1731
Epilepties, care and treatment of....1707
Epinephrin, color reaction given by....ab-1721
Erythremia....E-1696
Erythrocytes, sedimentation of, in surgical cases....ab-1734
Erythromelalgia, antimony in....ab-1725
Esophageal stricture in pregnancy....ab-1719
Exercise and blood nitrogen....ab-1728
Fallopian tube, echinococcosis of....ab-1733
Fat excess and the thyroid....ab-1725
Femur, functional elongation of....ab-1732
Fetal heart tones, stethoscope for....*1683
Fever, protracted slight....ab-1729
Filaria loa in subconjunctival tissues....*1685
Filters, lumen of pores in....ab-1730
Fistula, anal....ab-1730
from hairpin in bladder....ab-1728
Flügge, Carl, death of....1708
Foot, tuberculosis of bones of....ab-1729
**Foreign Letters....1703**
Gallbladder calculi....*1671
calculi, pathogenesis of....ab-1734
nonsurgical drainage of....1713
Gonorrhea, when is it cured?....1712
Gums, bismuth line on....ab-1732
Hair, white, and dental disease....ab-1727
Health, public, Jumet demonstration....1707
Heart disease, treatment of, in Switzerland....1728
Heat stroke....ab-1728
effect of, on vitamins....ab-1726
therapeutic application of....E-1697
Helminths cause endocrine derangement.ab-1728
Hemoclastic crisis, blood platelets in....ab-1728
Hemoglobin, electrochemical study of...ab-1721
Hemolytic titer of serum in immunized animals....ab-1734
Hip disease in infants....ab-1728
Hospital, exclusion of physicians from.MI.-1717
Hot Springs investigation....1702
Hyperpnea, anoxemia causes....ab-1721
Hypothyroidism, thyroid transplantation for....ab-1724
Infant, new-born, acid base equilbrium in....ab-1719
Influenza....*1689
bacillus, puerperal sepsis from....ab-1719
Insulin solutions, concentration of....ab-1720
Intestine, tetrachilomastix in....ab-1725
rhythmic movements and tonus in....E-1697
traumatic rupture of....ab-1726
Iodin requirements and fat excess....ab-1725
in public water supply....1701
Jaw, hyperostosis of....ab-1729
Kidney function tests in surgery....ab-1733
disease and cryoscopy....1707
infections, relation of bowel to....ab-1722
large kidney stone....ab-1724
tumors....ab-1730
Körte, Werner, 70th birthday of....1708
Larynx, stenosis of....ab-1723
Lead, hexanitrite test for....ab-1721
Leishmaniasis, Wassermann reaction in..ab-1725
Leprosy, spread of, in body....ab-1725
conference on....1702
Liability for injury from rented radium..1713
Licensure, further diploma mill investigations....1714
Liver, indigocarmine test of....ab-1723
Malaria, remote results of....1703
**Marriages....1709**
Medical discoveries....1712
**Medical Education, Registration....1714**
Medicine, literature on progress of....1913
**Medicolegal....1717**
Meningitis, pneumococcus....ab-1727
Meningococcus infections, therapy of....1704
Mercury poisoning, chronic, from freckle ointment....ab-1731
Metabolism, basal, and genitalia....ab-1732
basal, in psychoneuroses....ab-1721
Metals, oligodynamic action of....ab-1733
Midwives, control of....ab-1719
Mortality among wage earners....1717
Mosquito eradication....1717
Muscle tone in rickets....ab-1724
Myositis, ossifying....ab-1729
Nerve, facial, anastomosis of, in contracture....ab-1730
recurrent laryngeal and descendens hypoglossi?....C-1712
Nervous system and endocrines....1704
**New and Nonofficial Remedies....1693**
**News....1698**
Newspapers, medical publicity....E-1694
Oestrus ovis, ophthalmia myiasis externa due to....*1684
Ophthalmia myiasis externa....*1684
Otology, anaerobic germs in....ab-1728
Otorhinolaryngology, development of...ab-1732
Ovary, echinococcosis of....ab-1733
influence of, on basal metabolism....ab-1732
Palate, submucous fissure of....ab-1734
Panel struggle....1705
Paralysis, laryngeal, nerve anastomosis for....C-1712
Parathyroid preparations....ab-1724
Pediatrics and medical prejudices....ab-1728
Pemphigus, etiology of....E-1695
Physician and taxes....1707
Pineal body....E-1696
Pleurisy, pneumothorax in....ab-1727
Pneumothorax, artificial, bilateral....ab-1727
in pleurisy....ab-1727
Poliomyelitis....*1688
Pregnancy, extra-uterine, at term....ab-1730
acid base equilibrium in....ab-1719
Pregnancy, esophageal stricture in....ab-1719
phantom....ab-1732
with impassable vagina....ab-1723
Prostate, benign periurethral tumors...ab-1730
Pruritus ani....*1661
Psychoneuroses, basal metabolism in....ab-1721
Puerperal sepsis from influenza bacillus..ab-1719
Purin derivatives and coronary circulation....ab-1731
Pyelography, antiseptic medium for....ab-1722
double, suppression of urine after....ab-1722
Pyloric stenosis, blood after....ab-1721
Pyorrhea alveolaris....*1676
**Queries and Minor Notes....1712**
Rachitis, eosin with radiotherapy in....ab-1731
action of light in....ab-1734
muscle tone in....ab-1724
Radium, rented, liability for injury from..1713
Rat bite fever, spirochetes in....ab-1725
Regeneration and surface tension....ab-1734
Religion, "a divine healer"....C-1711
Roentgen irradiation of weakly children.ab-1731
intoxication....*1673, ab-1731
rays, effect of different wave lengths..ab-1725
Saliva, bacteria in....*1676
Sarcoma in bones, diagnosis of....ab-1726
Scholarships for Belgian students in U. S. 1707
Sciatica, epidural injections in....ab-1727
Sclerosis, transmission to guinea-pigs...ab-1734
Secretions, internal, and batrachia....ab-1728
and nervous system....1704
endocrine derangement from helminths....ab-1728
Septicemia, staphylococcal, with positive Wassermann....ab-1731
Serum, hemolytic titer of, in immunized animals....ab-1734
vitamins in....ab-1731
Sex, mistakes in....ab-1730
Sexual precocity....ab-1719
Shock, postoperative, employer liable for death from....MI-1718
Smallpox in London, outbreak of....1706
Smelling, diagnostic importance of....ab-1734
Snake venom supply in Argentina....ab-1730
action of antivenins....ab-1730
**Society Proceedings....1718**
Spine tuberculosis, bone implants in....ab-1729
cancer, metastatic....ab-1720
**State Board Examinations....1714**
Stethoscope for fetal heart tones....*1683
Stomach ulcer and syphilis....ab-1732
ulcer, choice of operation for....ab-1733
ulcer, protein therapy of....ab-1731
Students, medical, age of graduation of..*1679
Suprarenals and cholesterol....ab-1728
Sympathectomy, periarterial....ab-1731
Syphilis and peptic ulcers....ab-1732
campaign against, in Morocco....ab-1727
deafness from....ab-1723
Taxes and medical men....1707
Teeth and canities....ab-1727
and deficient diets....*1665, ab-1730
impacted....*1664
Tetany, postinfantile....*1687
Tetrachilomastix in intestine....ab-1725
Thrombosis, septic portal....ab-1723
Thyroid and fat excess....ab-1725
thyroid transplantation....ab-1724
**Tonics and Sedatives....Adv. page 22**
Tuberculin reaction, antagonists of....ab-1732
Tuberculosis, differentiation of endocarditis from....ab-1727
in systems of organs....ab-1732
pulmonary, associated infection in....ab-1729
pulmonary, early sign of....ab-1720
pulmonary, Forlanini foundation for research on....1702
vaccines in secondary infection in....ab-1723
Tumors, benign periurethral....ab-1730
Umbilical vein, transfusion through....ab-1723
Urethra, acquired diverticulum of....ab-1728
urethral pathology, symptoms of....ab-1719
Urinary tract, ascending infections of..ab-1722
Urine suppression after operations....ab-1733
color reaction given by....ab-1721
sugar in....ab-1721
suppression after double pyelography.ab-1722
Uterus duplex....ab-1733
hemorrhage, calcium in....ab-1733
Vagina, impassable, pregnancy with....ab-1723
Venereal diseases in children....1706
Vertigo, vestibular....ab-1732
Viscera, correlation between....ab-1731
Vitamins in serum....ab-1731
effect of heat on....ab-1726
Wassermann reaction, positive, in staphylococcal sepsis....ab-1731
in kala-azar....ab-1725
Water, bacteriologic examination of....ab-1729
iodin in public water supply....1701
Whooping cough, ether in....ab-1724
Worry, nervous element in....ab-1728
Yellow fever, Bucaramanga epidemic...ab-1729
date of yellow fever announcement....1713



**JUST READY** BEHNKE'S STAMMERING, CLEFT PALATE SPEECH & LISPING
Second edition $1.25 *Medical Books of All Publishers*
CHICAGO MEDICAL BOOK COMPANY Congress & Honore Sts., Chicago

**HAVE YOU SUBSCRIBED FOR HYGEIA** See Page 4

# The Journal of the American Medical Association

**Published Under the Auspices of the Board of Trustees**

VOL. 81, NO. 20 CHICAGO, ILLINOIS NOVEMBER 17, 1923


## THE SIGNIFICANCE OF A SEROHEMORRHAGIC OR HEMORRHAGIC DISCHARGE FROM THE NIPPLE *


EDWIN M. MILLER, M.D.
AND
DEAN LEWIS, M.D.
CHICAGO


A discharge from the nipple of a nonlactating breast is often the first indication to the patient of a lesion of the breast. It is frequently the cause of consultation with the physician. Palpation of the breast may reveal a tumor which may or may not be the source of the discharge or may not reveal any changes at all. In the former instance, the correct interpretation of the significance of the discharge may be a deciding factor in the differential diagnosis, while in the latter it may be an aid in reaching an opinion as to the character of the lesion.

A review of the literature indicates that the significance of a serohemorrhagic or hemorrhagic discharge from the nipple has been a matter of dispute among clinicians for some time. A thin serous or blood-stained discharge is regarded by many as indicative of an intracanalicular papilloma; a frank bloody discharge of carcinoma; and a mucoid or dark chocolate colored discharge of chronic cystic mastitis. Bloodgood [1] is of the opinion that a discharge from the nipple of a nonlactating breast is evidence of a benign rather than of a malignant lesion. If the discharge is serous or serohemorrhagic in character, it is almost a positive sign of an intracanalicular papilloma. In senile parenchymatous hypertrophy, a thick brownish or chocolate colored material formed by the accumulated products of degenerated blood and epithelium may often be expressed from the nipple.

Deaver and McFarland [2] state that a bloody discharge from the nipple is due in the majority of cases to papillary growths or to benign intracanalicular papillomas. They also state that in malignant disease of the breast a discharge occurs in but from 3 to 5 per cent. of the cases, and that when a discharge does occur in such cases it is as a rule due to involvement of the milk ducts in the malignant process. A discharge may apparently be due in such cases to changes in the ducts associated with the malignant process, but not malignant in themsleves. In rare instances a dilated milk duct in an area of abnormal involution, which may or may not have undergone malignant change, is the source of a hemorrhagic discharge.

Lewis,[3] in studying seven breast tumors associated with a serohemorrhagic discharge, found chronic cystic mastitis in two cases and small intracanalicular papillomas in five. Greenough and Simmons,[4] in reporting twenty papillary cystadenomas, laid particular stress on the frequency of a bloody discharge from the nipple and the characteristic location of the tumor—superficially in the region of the nipple.

According to Sistrunk,[5] a duct papilloma is the most likely cause of a hemorrhagic discharge from the nipple, even when no tumor can be palpated. Judd,[6] in discussing intracanalicular papillomas, says that a bloody discharge is the characteristic feature. The discharge is odorless and sticky, and stains the clothing a pale yellow. As a rule, it is slight in amount and comes in drops. Occasionally a considerable amount may be expressed by digital pressure applied directly over the tumor. In chronic cystic mastitis the discharge is usually thick and colorless, while the discharge associated with a carcinoma is more watery, darker in color, greater in amount, and often of rather a foul odor.

Those cases in which a serous or serohemorrhagic discharge occurs from the nipple and in which no tumor can be palpated in the breast form an interesting group. Bloodgood,[7] in referring to this group of cases, mentions two in which the breast was removed and small papillomatous cysts containing blood found when the breasts were sectioned. There were no recurrences in these cases five and fifteen years, respectively, after the operation. In five other cases with a discharge and no palpable tumor, no operation was performed; the bloody discharge stopped, no tumor developed, and the patients remained well. In one case a tumor developed three years after the patient was first seen. This was removed and found to be an intracanalicular papilloma. Bloodgood believes that a discharge from the nipple is observed in malignant diseases of the breast before a tumor is palpable in but about 1 per cent. of the cases.

Cheatle,[8] as the result of an exceedingly careful microscopic study of sections removed from different parts of breasts secured at operation and at necropsy, has classified papillomas as uniradicular and multiradicular. The former have a single fibrous stalk, are usually multiple, and occur in the deeper portions of

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Bloodgood, J. C.: Am. J. M. Sc. **135**: 157, 1908; Benign Lesions of Female Breast for Which Operation is Not Indicated, J. A. M. A. **78**:859 (March 25) 1922.
2. Deaver and McFarland: The Breast, Anomalies, Diseases and Treatment.
3. Lewis, Dean: Surg., Gynec. & Obst. **22**: 666 (June) 1916.
4. Greenough and Simmons: Ann. Surg., February, 1907.
5. Sistrunk, W. E.: New Orleans M. & S. J. **75**: 47 (Aug.) 1922.
6. Judd, E. S.: Journal-Lancet **37**: 141 (March 1) 1917.
7. Bloodgood, J. C.: Personal communication to the authors.
8. Cheatle, G. L.: Brit. J. Surg., October, 1921; **8**: 149 (Oct.) 1920.

the breast. They are rarely malignant. The multiradicular papillomas have a broad base, with many stalks of attachment, containing many blood vessels, being almost cavernous in nature. These, as a rule, occur

Fig. 1.—Low power view of papillary carcinoma in a breast with serohemorrhagic discharge from the nipple.

singly, most often near the ampulla of the milk ducts, and are very apt to become malignant. He has found in breasts in which no tumor could be palpated the following lesions: a large number of very minute benign papillomas; benign papillomas in the deeper portions of the breast with a beginning carcinoma near the

Fig. 2.—Low power view of a large carcinoma of the breast with serosanguineous discharge at the nipple; the papillary character of the growth in the center should be noted.

ampulla; a malignant degeneration of the epithelium of almost an entire milk duct, and two areas in widely separated portions of the breast in which were early malignant changes, either of which might have been the source of a hemorrhagic discharge. Weishaupt [9] found the source of hemorrhage in one case of chronic cystic mastitis to be a cavernous hemangioma, and in another case a vascular sarcoma.

Hald,[10] Tietze,[11] Dickinson [12] and Peachel,[13] by careful microscopic examination, have found malignant changes in the walls of what appeared clinically to be benign papillary cysts. Tietze found in forty-three cases of chronic cystic mastitis (Schimmelbusch) three that were malignant. Greenough and Simmons [4] found evidences of malignancy in 15 per cent. of the twenty intracanalicular papillomas studied by them.

Catherine Lewis,[14] in her study of 251 breast tumors, found that there was a discharge from the nipple in twenty-six. Among these were four spheroidal cell carcinomas, four duct carcinomas, four duct papillomas and six cases of chronic cystic mastitis. Her studies showed that 7 per cent. of the spheroidal cell carcinomas, 36.3 per cent. of duct carcinomas, 13.3 per

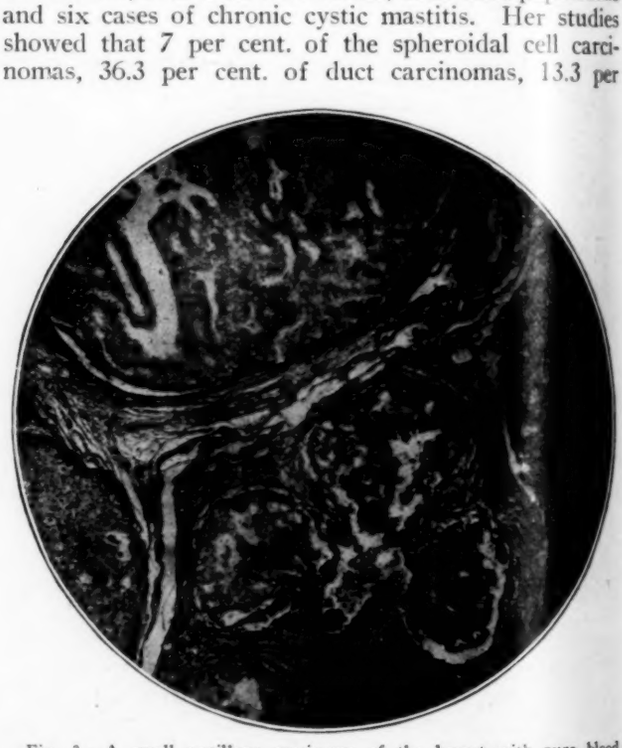


Fig. 3.—A small papillary carcinoma of the breast with pure blood discharge from the nipple; the tumor occupied an area close to the areola.

cent. of the cases of chronic cystic mastitis and 100 per cent. of the papillomas were accompanied by a discharge from the nipple.

Judd [6] reported 100 cases with a discharge from the nipple. In fifty cases the discharge was bloody; in fifty, nonhemorrhagic. In 54 per cent. of the first group, the lesion was a carcinoma; in 24 per cent., chronic cystic mastitis; in 16 per cent., intracanalicular papilloma, and in 6 per cent., Paget's disease. In 60 per cent. of the second group the lesion was a carcinoma; in 28 per cent., chronic mastitis; in 8 per cent., intracanalicular papilloma, and in 4 per cent., a simple cyst.

## SCOPE OF PRESENT REPORT

This report is based on the study of 700 breast tumors observed at the Presbyterian Hospital, forty of which at some time during their clinical course were

9. Weishaupt, E.: Arch. f. Gynec., 1917, p. 107.
10. Hald, J. K.: Norsk Mag. f. Lægevidensk, **83**: 592-601 (Aug.) 1922.
11. Tietze: Deutsch. Ztschr. f. Chir. **56**: 512, 1900.
12. Dickinson, G. K.: Am. J. Obst. & Gynec. **3**: 31-34 (Jan.) 1922.
13. Peachel, G. E.: Lancet, December, 1906, p. 1660.
14. Lewis, Catherine: Lancet, June 3, 1922.

accompanied by a blood-stained discharge from the nipple. Two hundred and seventy-four of the 700 cases were benign, and 426 malignant. Forty (5.7 per cent.) of the patients either gave a history of, or on examination presented evidence of, a pathologic discharge from the nipple; in one instance, the discharge, rather large in amount, was milky in character.

In thirteen instances the lesion associated with the discharge was benign, and in twenty-seven malignant. In proportion to the total number of cases, 4.3 per cent. of the benign and 6.3 per cent. of the malignant tumors were associated with a discharge from the nipple.

### BENIGN LESIONS

The following pathologic changes were found in the breast in the thirteen benign lesions: In six cases the

Fig. 4.—Bloody discharge from the nipple for a period of one month; region of nipple occupied by a benign papilloma; beneath the areola was an indefinite mass which presented the clinical features of a malignancy; microscopic sections, however, showed adenomatous tissue.

lesion was an intracanalicular papilloma; in four cases, chronic cystic mastitis, two of which presented definite papillary changes within the cavities of the cysts; in two cases the lesion was described as a fibro-adenoma, and in one as a cystadenoma.

*Absence of a Palpable Tumor.*—In five instances no tumor was noticed by the patient, and none was palpated by the examining surgeon. In two of these cases a small papilloma was found deep in the substance of the breast. In another case the lesion was a chronic cystic mastitis; in another, a cystadenoma. The discharge in all these cases was blood tinged. In one of these cases the patient, aged 35 years, had noticed for some time a serohemorrhagic discharge from the left nipple. No tumor could be palpated. When pressure was made on the upper and outer quadrant of the breast, the amount of discharge was increased. An operation was performed. The areola was reflected from the outer side. When this was reflected, a milk duct containing a blood clot was exposed. The por-

Fig. 5.—Cross section of gross specimen after excision of the papilloma which occupied the nipple region: *A*, region occupied by benign papilloma; *B*, adenomatous tissue.

tion of the breast communicating with this duct was then excised. When sections were made of the breast, a small papilloma, the size of the head of a black beaded pin was found deep in the substance of the breast. It is nine years since this operation was performed, and there has been no recurrence of the discharge.

*Time of Appearance and Location of the Tumor.*—In eight of the thirteen benign lesions, the discharge from the nipple was noticed before the tumor. In five cases the tumor was noticed before the discharge. In eight cases the tumor was located superficially beneath the areola (five intracanalicular papillomas; one cystic mastitis; one cystadenoma; one fibro-adenoma). In five cases the lesion was situated deep in the substance of the gland.

*Treatment.*—In ten of the benign cases, local excision of the tumor or resection of a portion of the breast

Fig. 6.—Low power section through the papilloma, which protruded at the nipple.

adjacent to it was performed. There have been no recurrences.

In three cases a radical amputation of the breast was performed. The radical operation was performed because of suspicion of malignancy. No

malignancy was found in these cases when a microscopic examination was made.

MALIGNANT TUMORS

Twenty-seven of the tumors proved to be malignant on microscopic section. In eleven of these cases, the discharge was bloody. In some of the remainder the discharge was described as blood-tinged and even clear and watery. In four, the character of the discharge was not noted. In three cases the discharge changed from a serous to bloody character. In four cases the discharge could be forced from the nipple by digital pressure. The character of the discharge in malignant disease seems to us to be much more often bloody than in benign lesions. The discharge may not be as great, but it is distinctly bloody in character.

Fig. 7.—Section made through the tumor mass beneath the areola, showing a cystic area lined by papillary elevations, in the center of which is epithelial débris containing blood.

Fig. 8.—A dilated milk duct led from the nipple back to a malignant papillary cyst; blood clots filled the dilated duct: *A*, nipple region; *B*, dilated duct containing blood; *C, C*, malignant papillary cyst; *D*, blood.

*Time of Appearance and Location of the Tumor.*—In sixteen cases the discharge from the nipple was the first indication of a lesion of the breast. In but nine cases was the patient conscious of a tumor before the discharge appeared. In thirteen cases the tumor was located about or in the nipple, while in fourteen cases it occupied the deeper portions of the breast. In five cases the disease appeared on the surface as an erosion or growth within the nipple, tumor formation occurring subsequently in the areola.

*Treatment.*—In all cases a radical operation was performed. In one case (in a woman, aged 29), both breasts were radically removed. In one case in which a supposedly benign tumor was removed locally, a recurrence developed shortly afterward, necessitating a radical operation. The following illustrative cases will be cited:

Fig. 9.—Low power view showing the papillary character of the carcinomatous cyst.

CASE 1.—S. H., aged 42, entered the service of Dr. Lewis, June 27, 1916. In January, 1915, she had noticed a blood stain on her night dress, and wondering whence it came, squeezed the right nipple and saw some blood. There was no pain, and she had not received any injury. She had never had trouble with that breast before, but during her first nursing period the opposite breast had twice been lanced. On examination, blood exuded from the nipple on pressure with the finger over the upper inner segment of the areola. No tumor was palpable. In the left breast were three healed scars. At operation, the following day, a semicircular incision was made along the edge of the areola, the gland tissue completely excised, and a reconstruction of the breast done with purse string sutures. The specimen removed showed an intracanalicular papilloma and a chronic cystic mastitis.

This patient was readmitted, July 6, 1921, complaining of pain in the left breast and a discharge from the left nipple. A lump had been noticed in the breast for several years, but the discharge was observed only the day before admission. On examination the right breast was small and depressed at its center. In the left breast could be felt a hard mass the size

of a lemon just above and connected with the nipple. On pressure over it, a drop of thick greenish material exuded from the nipple. The skin was somewhat dimpled over the tumor, and the axillary glands were palpable. At operation a curved incision was made along the latero-inferior margin of the breast, and a subcutaneous excision of the entire breast performed. The specimen contained several cysts filled with a green, mucoid material. Microscopically, several of the cysts contained small, papillary elevations, and throughout the tissue there was considerable round cell infiltration. The diagnosis was chronic cystic mastitis.

CASE 2.—Mrs. A. D., aged 51, entered the service of Dr. Lewis, May 16, 1911. Three months before, she had bumped the right breast. Four months later she noticed a hard nodule in the breast about 1 inch above the nipple, and two months later noticed a discharge at times from the nipple. It was at first serous; later it became blood-stained. There were intervals of ten days or more with no discharge, during which time the breast in the vicinity of the nodule felt full and distended. Then suddenly the discharge would appear and the feeling of the fulness pass away. There was some tenderness on pressure, but no real pain. On inspection, both

Fig. 10.—Low power section showing the papillary carcinoma.

breasts appeared normal. On palpation of the right breast, a firm nodule could be felt just above the nipple. It was not firmly fixed, and when it was squeezed a serosanguineous discharge exuded from the nipple. At operation a radical amputation was done after the tumor was removed locally and found to be suspicious of malignancy in one small area. The diagnosis was papillary cyst adenoma with early malignancy.

This patient entered the hospital again in 1916, for some other trouble, and more recently has had the opposite breast removed because of cystic disease; so there may be some question as to the malignancy of the original tumor.

CASE 3.—Mrs. N. C., aged 32, entered the service of Dr. Lewis, Nov. 28, 1919. The right breast had been swollen and red about three months after the delivery of a child, two years before. The swelling remained three or four weeks, and disappeared. The soreness, however, remained off and on since that time. Several months ago the breast began to enlarge again and she attributed this to a probable pregnancy, but before long she noticed a hard lump which rapidly increased in size. There was some redness about the nipple, and a thin, yellowish green discharge exuded from it. On examination, the right breast was enlarged to about four times its normal size, hard and nodular. A thin, serous, greenish fluid exuded from the nipple. No regional glands were palpable. The patient was in the seventh month of pregnancy. When a radical operation was performed, carcinomatous metastases were found in the axillary glands. The diagnosis was scirrhous carcinoma.

CASE 4.—Miss I. W., aged 29, entered the service of Dr. Lewis, May 15, 1922. A tumor mass had been noticed in the upper outer part of the right breast for about eight months,

Fig. 11.—Section of a papilloma removed from a dilated milk duct; dilated portion of duct containing growth situated superficially beneath the areola to the outer side of the nipple; a serohemorrhagic discharge escaped from the nipple, the amount of the discharge being increased by pressure.

and the lower portion of the breast had also been hard and painful. Occasionally during this time a slight yellowish discharge appeared at the nipple, and the last two times appeared distinctly bloody. On examination, a large, movable tumor mass, 5 cm. in diameter, occupied the upper half of the right breast. Below and medial to it was a hard, tender nodule. The nipple was covered by a bloody secretion. In the opposite breast could be felt a small, movable nodule just medial to the nipple. A radical amputation of the right breast revealed a carcinoma. May 29, 1922, the patient

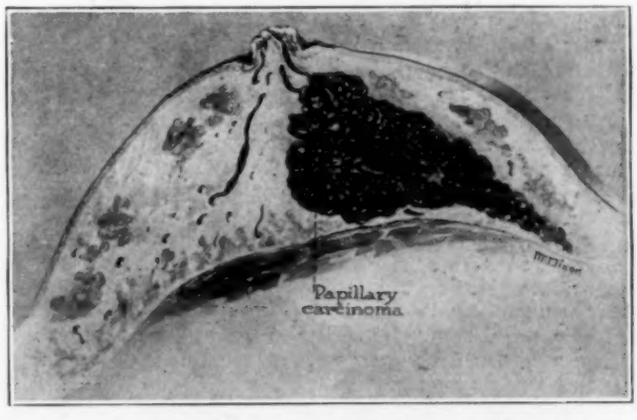



Fig. 12.—Papillary carcinoma associated with a serohemorrhagic and hemorrhagic discharge from the nipple; milk duct encroached on and invaded by the growth.

returned to the hospital for amputation of the opposite breast, which also showed carcinoma.

CASE 5.—Mrs. I. B., aged 54, entered the service of Dr. Lewis, March 9, 1920. Ten years before, she noticed that the left breast was more firm than the right, and at times gave her pain. During the last year a tumor had become quite

definite, had grown larger, and had become more painful. At times she observed spots on her underclothing, sometimes a yellowish clear fluid, sometimes pure blood. At times there was shooting pain in the axilla, and occasionally her arm appeared swollen. On examination, the left nipple was slightly inverted, hard and very tender, and fixed to a frozen-in mass in the region of the areola. A radical operation was performed, revealing a carcinoma. Within eighteen months she returned with a recurrence in the cervical glands.

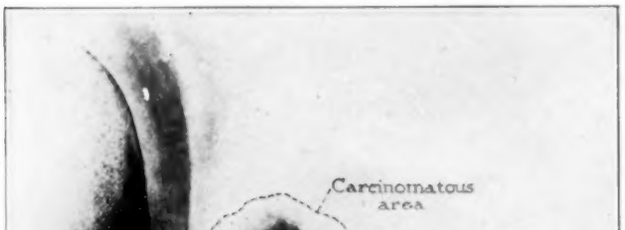



Fig. 13.—Increase in discharge on pressure; this growth is situated deeper in the breast than is the intracanalicular papilloma.

CASE 6.—C. F., aged 35, admitted to the Presbyterian Hospital May 12, 1914, complained of a serohemorrhagic discharge from the left nipple, which had been noted for several months. This was the chief complaint. Because of it she consulted a surgeon. When the breast was palpated, no tumor could be felt. Pressure was made over different parts of the breast. When pressure was made over the upper and outer quadrant, the serohemorrhagic discharge was increased in amount. At the operation, the areola was reflected. When this was done, a milk duct was found which contained a blood clot. This was traced backward into the breast, and the portion of the breast communicating with this duct was resected. When the tissue was examined, a small papilloma the size of the head of a black beaded pin was found deep in the breast. There has been no recurrence of the discharge, and the patient has been perfectly well.

CASE 7.—P. E., aged 31, admitted to the Presbyterian Hospital, Aug. 26, 1923, in the service of Dr. Lewis, for about three years had noticed a slight, cream colored discharge from the right nipple during each menstrual period. One month before admission, she noticed bleeding from the nipple, and a scale would form which she would pick off. Two weeks before admission, while at a dinner party, there was profuse bleeding from the nipple, and the following day she consulted a skin specialist, who applied ointments for a few days and then referred her to the surgeon. On examination, a raw, red, cherry-sized tumor with a smooth, shiny, moist surface occupied the position of the right nipple (Fig. 4). About its base the skin was pale, but normal. The breast tissue beneath the nipple was firmer than in the normal breast, but no definite tumor could be made out. Blood was not expressed from the nipple by manipulation. At operation, on the suspicion of malignancy, a radical amputation was done. Microscopic sections, however, showed the papilloma to be benign and the underlying tumor to be adenomatous tissue, with cystic dilatation of the ducts lined by papillary elevations (Figs. 5, 6 and 7).

CASE 8.—C. G., aged 25, two days before admission to the hospital noticed a blood stained discharge from the nipple. This appeared after the use of a Turkish towel used rather roughly while drying after swimming. This discharge was not large in amount, but stained her clothing. No tumor had been noted before. When she entered the hospital, July 15, 1921, a tumor was found just beneath the areola of the left breast to the outer side of the nipple. When pressure was made on this, the amount of discharge from the nipple was increased. The size of the tumor could be reduced by pressure. No other changes were found in the breast. An intracanalicular papilloma was removed from a dilated milk duct. This, on microscopic examination, proved to be benign. The patient was examined two years after the operation, and no evidence of any disease of the breast was found.

## CONCLUSIONS

1. About the same proportion of benign and malignant tumors in the series studied has been associated with a discharge from the nipple (benign, 5.7 per cent.; malignant, 6.3 per cent.).

2. About half of the benign tumors having a discharge were papillomatous in character, occurring either as duct papillomas or papillary ingrowths in chronic cystic mastitis.

3. The discharge was bloody in almost one half, seventeen of the forty cases, and ten of these were malignant. It was serohemorrhagic in eleven cases, and eight of these were malignant.

4. In twenty-two cases the discharge was present before the tumor appeared. Eighty per cent. of these cases were malignant.

5. In nineteen cases, the tumor occupied the region immediately about the nipple, and about two thirds of these were malignant.

It is quite obvious, from the analysis of the cases cited, that a serohemorrhagic or hemorrhagic discharge

Fig. 14.—Chronic cystic mastitis; papillary growths into the cavity of the cysts; the discharge in this case was chocolate colored or dark, owing to alteration in blood which was retained in the cysts.

from the nipple may be associated with either a benign or a malignant lesion. The outstanding fact is that the character of the discharge may vary considerably with the same type of lesion, and that the same kind of discharge may be associated with lesions considerably different in character. The amount, color, odor and consistency of the discharge depend not only on the

pathologic lesion from which it originates, but also on the degree to which it is altered before it reaches the surface of the nipple. An eroded vessel will always bleed, no matter whether at the tip of a benign papilloma or adjacent to or within a papillary carcinoma. If the tumor from which the hemorrhage occurs is near the nipple, the blood will appear on the surface of the nipple but little changed. If, on the other hand, the bleeding arises from a papilloma or carcinoma in the wall of a cyst or dilated milk duct lying deep in the breast, the blood, degenerated and intimately mixed with the products of cellular disintegration, slowly finding its way to the surface of the nipple will be much changed in appearance.

The presence of a discharge from the nipple of a nonlactating breast is evidence of a pathologic lesion, but the diagnosis must be made on the usual signs and symptoms associated with benign and malignant lesions. The discharge cannot be regarded as of any great significance in differential diagnosis.

When a serohemorrhagic discharge occurs and no tumor is palpable, the lesion is in all probability a small, benign intracanalicular papilloma situated deep in the substance of the breast. Such, we believe, should be removed. If the areola is partially reflected, after the portion of the breast has been determined which on pressure gives rise to the discharge, a milk duct containing a blood clot can usually be found, and the portion of the breast communicating with it can be resected.

---

# AMEBIC INFECTION IN THE STATE OF WASHINGTON *

GEORGE A. DOWLING, M.D.
SEATTLE

Since the original statement of Lösch concerning disease-causing amebas, there has been discussion and dispute, first, as to whether these organisms actually caused the clinical symptoms and pathologic changes with which they were charged; secondly, as to their classification, differentiation and pathogenicity; thirdly, their nomenclature, various phases of their life cycle, cultivability and methods of transmission; and, finally, these points of dispute having been reasonably well settled, there still seems considerable difference of opinion as to the geographic distribution of the organism and as to whether the clinical manifestations of the disease caused by *Endameba histolytica* are modified by location or whether the disease in temperate climes may be caused by an organism morphologically indistinguishable from *E. histolytica,* but less toxic in its action. Further, doubters are not few among clinicians and even among laboratory workers of limited experience who charge that the harmless *E. coli* is often miscalled *E. histolytica,* and that the mild diarrheas and colitis seen associated with amebic infections of the intestinal tract are not caused by *E. histolytica,* but merely force a stool examination which discloses the presence of the commensal *E. coli,* which is then misnamed and blamed.

A healthy skepticism has always been of value in restraining undue enthusiasm in medicine, but the same quality carried beyond limits begets prejudice and reaction. It would seem that the report by conservative workers of endemic infection with *E. histolytica* of dwellers in the Northern states should have lessened the doubt; but the continued existence of questioning minds is the reason for the report of this small group of cases.

If such mistakes as have been charged are being made frequently, discussion should enlighten those most in need of education; and if diagnoses are being missed because of reactionary ideas, discussion is demanded for the enlightenment of the other group of offenders.

In the present report, little time will be spent on the morphology and differentiation of the different forms of endamebas, as that has been and can be given better by those more directly engaged in laboratory investigation. As this is primarily a clinical report, more space will be given to the clinical aspect.

Thirty cases in all are reported from my work and that of my associates in Seattle. These are cases of infection with *E. histolytica* recognized in the study of 13,000 patients coming with all varieties of complaints covered in the departments of medicine, general surgery, orthopedic surgery, urology, eye, ear, nose and throat, and radiology. No effort has been made as yet to determine by routine examination of stools the percentage of carriers in the Puget Sound region. All patients proved hosts of *E. histolytica* had stool examinations because of some point in their histories suggesting the possibility of parasitic intestinal infection. Many were examined who were not hosts. Many were found harboring *E. coli,* a few were found infected with *Endolimax nana,* and some had more than one variety of parasite. Some who, from their clinical history, were confidently expected to show infection, failed to do so, and I still believe that we have failed to demonstrate *E. histolytica* a few times when it was present. No diagnosis of such infection, however, has been made without the demonstration of the organism.

Until two years ago it was practically impossible to have the diagnosis of *E. histolytica* infection confirmed by the local laboratories unless the case was clinically definite and recently imported. This conservatism has forced the clinicians also to be very circumspect, so that in classifying a case as one of *E. histolytica* infection we have demanded rigid proof and have refused to accept as such infections any cases which the laboratory worker did not unqualifiedly certify.

Laboratory diagnosis has been based primarily on the finding of large, actively motile amebas of classic appearance, especially the finding of ingested red blood cells having been insisted on. These amebas have been found either in freshly passed feces, the second or third stool passed after a saline cathartic, or in mucus removed from the bowel wall or ulcers during proctoscopic examination. Confirmation in some cases has been made by observations on the cyst stage. In one case, amebas were demonstrated in the contents of a solitary liver abscess. Valuable aid in diagnosis has been rendered and moral support given by Prof. A. P. Jamieson, protozoologist in the Department of Zoology of the University of Washington

## OBSERVATIONS

Of the thirty cases here reported, sixteen were in men and fourteen in women. Twenty-four patients were married, five were single, and one was widowed. The youngest was 20 years of age, the oldest 62. Five were under 30, twelve between 30 and 40, six between 40 and 50, five between 50 and 60, and one over 60.

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

Seven were of foreign birth; Austria, two; Russia, two; Switzerland, one; Italy, one, and Canada, one. All others were native Americans, all except two having been born in Northern States. These two were natives of Mississippi and of Texas.

That occupation played small part in the infection is evidenced by the fact that no fewer than nineteen occupations were stated: housewife, seven; office worker, three; police officer, two; missionary, two; United States Navy enlisted men, two, and one each of miner, cook, hospital employee, lumber camp superintendent, trained nurse, dairyman, grocery clerk, stationary engineer, machinist, civil engineer, rancher, physician, milliner and miller. Two classified as civilians had received their infection while in the army in France; one of the policemen was infected in the Philippine Islands during the Spanish-American War, and the two navy men and the missionaries were infected in the Orient. Just so far was occupation of importance.

Twelve apparently received their infection in the state of Washington; three in other Northern states and territories, Michigan, Indiana and Alaska; two in Southern states, Mississippi and California; two in France while in military service; one in Switzerland; one in Austria; two in China; one in India, and two in the Philippine Islands. There is no record as to place of infection of the other four.

Twenty-five gave a history of chronic or intermittent acute diarrhea. Five denied ever having had diarrhea. The shortest period of duration of symptoms was two months. This patient was acutely ill with amebic dysentery contracted just before leaving China. Two patients had histories covering thirty years, one twenty-five years, one twenty and one eighteen years. The remainder had been ill for shorter periods. Four gave such an indefinite or unintelligent history as to make impossible an accurate estimate of duration of symptoms. Twenty-two of the thirty patients had been operated on for a total of thirty-five operations. Fifteen of the operations were abdominal. Four were for cystic ovaries, all on the same patient; two were for the repair of postoperative hernias; one was a hysterectomy; one was a salpingectomy, and seven were appendectomies. Of the seven whose appendixes had been removed, only two received any relief. These were both operated on during acute attacks of appendicitis, one before he had ever had any symptoms of colitis, and one after his dysentery was long established. Both of these were completely relieved by the operation of the symptoms for which the operations were performed. Of extra-abdominal operations there were eight tonsillectomies, six operations for tuberculous cervical adenitis, all on one man; one hemorrhoidectomy; one operation for varicose veins of the leg; one bilateral castration; one curettement; one thyroidectomy for exophthalmic goiter, and one biopsy on a tumor in the rectum.

Conditions associated with the colon infection, but not necessarily related, were diagnosed with the following frequency: neurasthenia, eight; migraine, four; diseased tonsils, four; chronic bronchitis, colloid goiter, mitral stenosis, abscessed teeth, and secondary anemia, twice each; and hemorrhoids, adenomas of the thyroid, uterine prolapse, obesity, chronic arthritis, endocervicitis, chronic infection of the maxillary sinus and cholecystitis with gallstones, one each.

The primary complaint was in eight cases "stomach;" in seven, diarrhea; in five, abdominal pain; in three, "debility," and in three rectal; and in one each it was constipation, leg pains, headache and pruritus ani. As secondary complaints, diarrhea and general debility occupied prominent places, with five each. Constipation and abdominal cramps gave three each; dull abdominal pain and distress, gas in the bowels and stomach distress, were each complained of twice; and fever, sweats, hemorrhage and pus from the rectum, leg pains, goiter, and bad taste in the mouth, once each.

Most of the symptoms just mentioned were more frequent than noted, but were not volunteered by the patient, but brought out on questioning closely. Thus, diarrhea was actually complained of only twelve times, but on questioning was found present in twenty-five of the thirty.

A composite history of these patients would give a picture of a patient in middle life, a chronic sufferer from vague and variable abdominal and gastro-intestinal troubles; indigestion, gas in the stomach and bowels, flatulence, cramps, dull aches and tender colon; repeated attacks of diarrhea with intensification of all symptoms; occasional blood and pus with diarrheal stools; chilliness, fever and sweats; often constipation between acute attacks; and sometimes rectal pains and cramps; as secondary symptoms intimately or remotely related to the colitis, a marked degree of neurasthenia; at times loss of weight, back pains, leg and joint pains, hemorrhoids and pains at the tip of the coccyx, recurring ischiorectal abscess, pruritus ani, and bad taste in the mouth, nausea and vomiting; and finally and prominently, a general run down condition and *E. histolytica* in the stools.

As accidents are added abscess of the liver and pelvic abscess from perforation of an amebic ulcer.

Gastric analysis was done in nineteen cases. The highest acidity was free hydrochloric acid 61, and total acids 81. Eight had acids considered low, and of these three had achylia. One of these had gallstones and a chronic cholecystitis, which was considered a possible factor in the production of the achylia. One other had migrainous headaches.

No attempt was made at treating any patient without placing him at rest in a hospital. Thirteen patients in all submitted to treatment in some form. While all of the thirty had gastro-intestinal symptoms which suggested examination of the stools, at least five told a story so vague that we were compelled to class them as contact carriers. Some patients hesitated to undertake the rigid treatment outlined, in view of the guarded prognosis given, and a few cases recently diagnosed are not yet under treatment.

Amplifying the statement made above as to contact carriers, we have discovered no contact carrier who did not give on questioning a history of troubles which could be explained by an underlying colitis. And further, we have still to see a wholly symptom-free convalescent carrier, and we wonder whether continued careful investigation from the clinical side will not confirm us in our opinion that most if not all hosts of *E. histolytica* pay a price in lowered health for the continued harboring of the parasites.

### TREATMENT

In the treatment of these cases, ipecac in some form has been the drug relied on. The earlier patients treated were put to bed and ipecac in keratin-coated

capsules was administered early each morning on a fasting stomach. Ninety grains (6 gm.) were given the first morning, eighty the second, and so on, the dose being reduced to 10 grains (0.65 gm.) each day until a 10 grain dose was reached. This dose was continued daily for one month. These patients were kept in bed two weeks. As a matter of fact, very few of them continued their treatment with any degree of regularity after leaving the hospital. Most of them required one-half grain (0.03 gm.) of morphin hypodermically before the ipecac was administered, to reduce the attending nausea sufficiently to permit the patient to retain the dose. Each patient, after he received his ipecac, was kept as quiet as possible for six hours, lying on his right side, and during that period received nothing by mouth. After that time, if he desired, he had two slices of toast and a cup of tea. Very few desired or could retain food so soon. Later in the day, liquid ad libitum was given, and a full tray of food at night.

In addition to the ipecac by mouth, 1 grain (0.065 gm.) of emetin hydrochlorid was given hypodermically every other day during the stay in the hospital, and every other day an enema of a pint of kerosene was given, the usual precautions to prevent burns being used. Practically all the patients lost weight while taking treatment. Nine patients were treated by this method, with some slight modification. Not every patient was able to take a daily dose of ipecac. One patient acutely ill of amebic dysentery was relieved completely of her symptoms, but not of her amebas, by three injections of emetin hydrochlorid, whereupon she continued her journey East. One refused to continue her treatment after three days' effort. One received two complete courses of treatment as outlined above without clearing his colon of amebas. The other six were relieved of their parasites.

One of these patients, shortly after treatment, developed a pelvic abscess from perforation of an amebic ulcer in the sigmoid. Diagnosis was confirmed by operation and later by necropsy. One of the thirteen treated patients came under observation suffering from a liver abscess. This was drained surgically, and in the typical pus *E. histolytica* was demonstrated. Death finally ensued from septic infection. There was no necropsy. This patient received only surgical treatment.

The last three patients treated have been put to bed, cleansing enemas only given as needed, and a daily dose of 3 grains (0.2 gm.) of emetin bismuth iodid in a lightly coated keratinized capsule given by mouth at 5 a. m. each day until a total of 36 grains (2.3 gm.) has been given. Each dose had been preceded by morphin sulphate, ½ grain (0.03 gm.) or pantopon, ⅓ grain (0.02 gm.) hypodermically, and the regular routine as to food and quiet observed. Sometimes nausea and depression caused treatment to be suspended for a day. After the twelve days of treatment, the patients required about two days before getting on their feet.

In none of the three patients treated by the latter method have amebas been demonstrated in the stools after treatment. None have developed neuritis.

In comparing the two methods of treatment, we have discarded ipecac and the hypodermic administration of emetin for the following reasons: 1. The hypodermics of emetin hydrochlorid are quite painful. 2. Five patients developed a sensory neuritis of such a degree that complaint was bitter for a long time, and complete relief from pain was not secured for three months in one case. The first symptom these patients complained of was a weakness. To this were shortly added increasing pains in the distribution of peripheral nerves, particularly in the arms and legs. This continued for a variable period, but the weakness apparently increased for a time and persisted for a much longer time, in one case for three months. 3. At least one patient with myocarditis already present had his heart symptoms made markedly worse, apparently from the toxic effects of the drug. 4. Failure to clear the stools of the amebas occurred in one patient whose treatment was very carefully and repeatedly carried out. Other failures were caused by the refusal of the patient to continue a treatment considered by him unduly punishing. 5. It is admitted that more than one course of this treatment is usually necessary.

Since we changed to the emetin bismuth iodid treatment given by mouth, no failures have been encountered, either by reason of the patient's refusal or inability to continue the treatment, or through failure to remove the amebas completely from the stool. The experience of others runs parallel with ours. Only one course is needed. If failures have occurred, none have been demonstrated by frequent examination.

The discomforts to the patient from this treatment are, first, the necessity for him to remain in bed for the major portion of his time while under treatment; second, nausea caused by the exhibition of the drug, and the disagreeable effects of morphin or pantopon given to control the early nausea. Nausea caused by morphin often persists in susceptible individuals almost to the time of the next dose of emetin, but its administration is usually necessary to prevent vomiting of the specific.

No neuritis has been observed in our small series of cases thus treated.

## RESULTS

The condition of the patient following treatment calls for comment. Though he may be relieved of his intestinal parasites, it has been our experience that he still has colitis requiring careful dietetic treatment, and his general condition, instead of better, is often worse immediately following his specific medication. All patients leaving the hospital receive diet lists and careful instructions as to care of the bowels later. The neurasthenic habit of years is not easily broken, and the problem confronting the physician is frequently identical with that of the sufferer from a mucous or nonspecific colitis. The few we have been able to keep in bed and under the dietetic and physical regimen for treatment of the asthenic state have made most progress toward recovery. Here, too, let me say that treatment of a colitis by ordinary dietetic means is futile if the colitis is caused primarily by *E. histolytica*. The amebas must be got rid of first.

One took the hypodermic treatments and ipecac with some clinical improvement, but still has his infection with amebas. He has not yet received a course of emetin bismuth iodid. Six receiving this treatment (ipecac and emetin) were freed of their parasites. An appendical focus has been mentioned as a possible source of reinfection after treatment.

Three patients treated only with emetin bismuth iodid have been relieved of their parasites, and two of them have made marked improvement clinically. The third classed as a carrier has now no demonstrable amebas, but complains still of pruritus ani, though rather less than formerly.

### CAUSATION

The concentration of Oriental population on the Pacific Coast is well known. The percentage of Japanese and Chinese to the total population of the United States is only 0.163 per cent.; in California, 2.9 per cent.; in Oregon, 0.9 per cent.; in Washington, 1.5 per cent.; in King County, which includes Seattle, 3.2 per cent., and in Pierce County, which includes Tacoma, 2 per cent. In the whole United States there are only 172,649 Japanese and Chinese, and of these, 127,755 are found in the states of California, Oregon and Washington.

Because of the 19,750 Orientals in the county of King (3.2 per cent.), careful inquiry was made of each patient to determine, if possible, whether his infection had such an origin. No direct support of this hypothesis was found. But the fact that there is such a rapidly increasing Oriental population, and that the Japanese, particularly, are largely interested in the production and marketing of our fresh vegetable supply, plus the fact that Pacific Coast ports are gateways of entry for Orientals and Caucasians returning from the Orient, must keep our attention focused on the Orient as a possible source of infection.

### SUMMARY

1. Infection with *E. histolytica* is not negligible in the Pacific Northwest, and should be borne in mind in investigating vague and obscure abdominal complaints.
2. Carriers, while undoubtedly present, are not usually symptom-free.
3. Serious complications occur (liver abscess; perforation of ulcer).
4. Emetin bismuth iodid by mouth is to be preferred to ipecac by mouth and emetin hydrochlorid hypodermically as a specific.
5. Clearing the bowel of the amebas is only one step in the cure of the patient.
6. No evidence connecting our Oriental population with the infection has been secured.

---

## ABSTRACT OF DISCUSSION

DR. F. D. GARRETT, El Paso, Texas: We have rather warm summers in El Paso and a good deal of dysentery. Being on the Mexican border and having a large U. S. Army post gives us more or less contamination with the tropics. Our location somewhat favors the presence of carriers of the infection. In its distribution, the infection at present does not seem to be limited to any stratum of society, being quite as likely to be in the home of the banker as in the homes of the poorer classes of people. I have the impression that those who eat a great many fresh vegetables and fruits are a little more likely to contract the disease than the very poor who cannot afford them. As to the best form of treatment, according to the observations that I have been able to make, I find ipecac to be effective. Emetin I still use, but I use it more for controlling the symptoms. The early cases I have seen have nearly all responded to intensive ipecac treatment. Ipecac, 5 grains every hour for ten hours during the day, accompanied by half a grain of emetin hydrochlorid once or twice a day, usually results in controlling the acute symptoms inside a week. Retention enemas of quinin bisulphate, 1:1,000, with thymol, 1:3,000, are helpful. I use other forms of treatment, as emetin bismuth iodid, and large doses of thymol, which seems to have a better effect in chronic cases. I desire also to call attention to the importance of getting rid of the encysted forms. It is very inaccurate to rely on the motile forms of amebas for diagnosis. If we do rely on them we are often misled. In my opinion it is far more important and much more reliable to be guided by the finding of pathogenic cysts.

DR. HAROLD W. WRIGHT, San Francisco: During the past year I have analyzed twenty-five cases of this infection. Every one of these patients was referred to me because they were nervous, and were considered to be neurasthenics. There was some neurotic disturbance. The average duration of symptoms before the final diagnosis was three and a half years. Some of these men seemed to have contracted their infection at Camp Lewis, and the rest in France and in the Philippines. As to the arthritis cases, only two were found, involving the upper spine; at the level of the pain were calcified deposits. Dr. John B. Long, who was formerly in the Philippines, told me that not only did he frequently find arthritis in amebic and dysentery cases, but also the roentgen ray had shown calcified deposits at the level of the spine to which the pains were referred. They were all outpatients, and the treatment was very unsatisfactory. In most instances ipecac was given with considerable improvement. Five appeared to be cured after a year, thirteen improved, and in seven no improvement was noticeable.

DR. F. C. YEOMANS, New York: This paper is important as illustrating the distribution of this infection. We know that the amebas exist everywhere. They are not killed by freezing, but are found in the arctic regions as well as in the tropics, owing to the expansion of commerce. Proctoscopy is an important aid in the diagnosis. In early active cases of amebic dysentery the ulcers are characteristic. You may make the diagnosis by seeing these pearl-like ulcers in the rectum and in the sigmoid, where they usually occur in this latitude, and, while the tube is in position if material is taken from the ulcer and examined under the microscope, we usually find the motile organisms. After the ulcers have existed a long time and have become secondarily infected, their appearance is not pathognomonic, but resembles a chronic ulcerative colitis. I believe that these cases should be reported to the health department and isolated, because they are a menace to the community. At present they are not reportable in many states. Those suffering from the disease should be kept under observation till cured, and rules should be prescribed as to the kind of work they may engage in, as well as rules of general hygiene.

DR. J. RAWSON PENNINGTON, Chicago: Captain Armitage of the British Army reported a case of fatal brain abscess following amebic abscess of the liver. He says that motile endamebas were found without difficulty, and that they resembled exactly the endamebas seen in dysenteric stools. Furthermore, examinations of pus from the brain abscess showed *B. coli*, streptococci and staphylococci. Now, while amebas are of microscopic size, they are gigantic in comparison with microbes, and if the animal parasites can be carried from the intestinal canal to the brain, why not the vegetable ones as well? If the amebas can get through, from the intestinal canal, and produce a cerebral abscess, why can not other forms of bacteria do the same? Moreover, not only bacteria but toxins from the intestinal canal, especially those arising from infections of the anorectal region, may give rise to many nervous and mental affections.

DR. G. A. DOWLING, Seattle: I do not believe that I have brought out anything particularly new, except to call attention to the existence of the infection in a part of the country where it had not been reported as being prevalent before. Also, I want to emphasize once more the insidious character of the disease—that is, the absence of distinct symptoms on which a diagnosis can be made, and particularly to the occurrence of more or less chronic and neurotic symptoms, neurasthenia and exhaustion. These symptoms seem to be of great importance, particularly in the chronic infections that we have seen in the North. In regard to the necessity for the isolation of cases suffering from the infection, as brought out by Dr. Yeomans, I would say this: In the state of Washington these cases are reportable, and patients are subjected to a modified form of isolation—that is, they should not use the same articles as the other members of the family, and things of that sort. It seems a little illogical that there should be such a ruling, because in the promulgation of this order only cases of real amebic dysentery apparently were considered. Patients actually sick with diarrhea were considered, and those apparently are not the cases which are dangerous in

the carrying of the disease. The encysted stage is the dangerous one, and carriers cannot be picked up except by a routine examination of the entire population. So at present it does not seem useful to carry out any such plan.

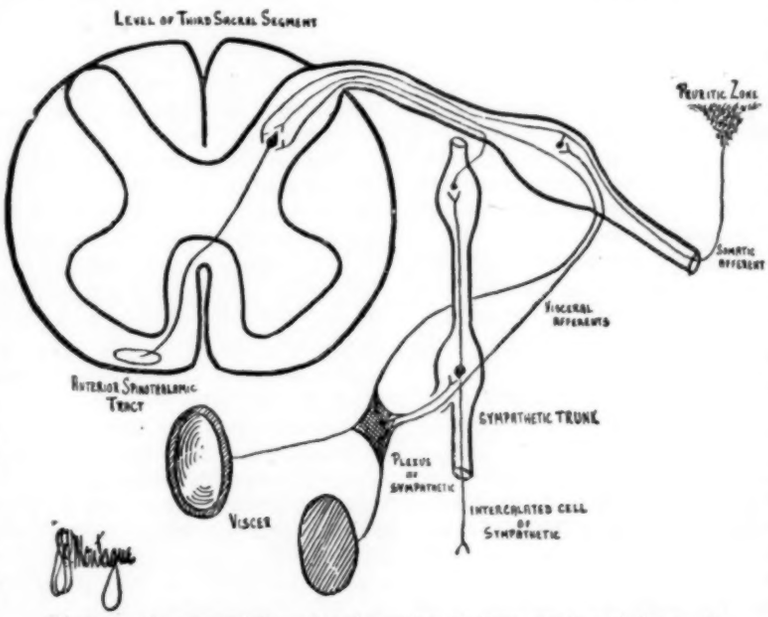
---

## RELATION OF PRURITUS OF ANUS TO CHRONIC DISEASES OF ABDOMINAL AND PELVIC VISCERA*

J. F. MONTAGUE, M.D.
NEW YORK

Pruritus of the anus is a general term denoting an intolerable itching of the anal and often the entire perineal region. I recognize two distinct forms—the distinction depending on whether the irritative cause is within or outside the zone in which the pruritus is felt. In the two forms the general character and location of the itching is identical, but the seat of the cause is not always within the area affected and often not in the perineal region at all.

Concerning that form in which a source of direct irritation to the nerve endings in the pruritic zone is evident, nothing will be said except that I believe it to be a distinct clinical entity, and like to refer to it as pruritus ani. We are, however, here concerned more particularly with the other form, which I designate with the term anal pruritus. In this form the causes at work in the production of the itching are located in an area other than that in which it is felt. The phenomenon, being the subjective manifestation of another clinical entity, is merely a symptom. It is, in truth, an unrecognized early manifestation of chronic visceral disease. This fact and its significance have not as yet been recognized by any other than myself.




Diagrammatic representation of anal pruritus (indirect pruritus of the anus).

Anal pruritus, as defined above, has often been observed to bear an apparent relation to the presence of pelvic or abdominal disease. There are so many instances of this on record that I will simply refer briefly to a few that are noteworthy.

Innumerable clinical observations and the bulk of medical literature will support the statements that I am about to make. I quote no authorities for the reason that they have been observed and reported by so many that it is needless.

In many of those chronic diseases of the stomach associated with dyspepsia, chronic gastritis, there is added to the clinical picture the condition known as anal pruritus. This is particularly true in cases associated with much gastric fermentation. In these cases, a cure or relief of the gastric condition often brings about a parallel relief in the pruritus. Medical literature reports the association in some cases of carcinoma of the stomach with pruritus; and many other chronic diseases of the gastro-intestinal tract, such as chronic colitis, chronic constipation and fecal retention, have also been observed to have an apparent relation with the causation of pruritus of the perineum.

In a closely similar manner, an identical apparent relation has been observed in some patients with chronic diseases of the genito-urinary tract. As examples of this, chronic endometritis, chronic prostatitis, hypertrophied prostate and chronic urethritis may be mentioned.

Of the other chronic visceral diseases which at times appear to bear a relation to this condition, obstructive derangements of the liver, such as hypertrophic cirrhosis of the liver, are notable instances. Chronic cholecystitis, chronic nephritis, cystic calculus and neoplastic growths of the liver have each contributed their share of examples of this relation to pruritus of the anus or perineum. Other instances might be furnished, but these are sufficient at present for our purpose.

If we bear in mind the observations mentioned above, it will be noted that the general factors involved are that chronic visceral diseases are very frequently associated with pruritus of the perineum. These chronic visceral diseases are those that are associated in most cases with chronic inflammation, and in almost all cases with a departure in size from the normal either by virtue of hypertrophy, hyperplasia, congestion or distention. Since we know that each of these viscera is supplied with a network of nerve fibers which are particularly abundant in the capsule, it is logical to assume that a departure from the normal size of such organ would cause the generation of afferent nervous stimuli. Those diseases which Osler states as having pruritus as a concurrent condition are diabetes, Hodgkin's disease, lymphoid leukemia and exophthalmic goiter. All of these diseases, it will be noted, involve a departure in size of the viscera they affect.

This is my firm belief: Whenever a viscus is the seat of a chronic inflammation, congestion, hyperplasia, hypertrophy, distention or dilatation, a stream of afferent stimuli are generated by the mechanical tension on the neural arborizations terminating in its capsule, and such stimuli are transmitted by the afferent visceral nerves to the central nervous system.

The viscera, however, are supplied by fibers of the autonomic nervous system, and these fibers are not able to convey pain. Langley, Dogiel and Ranson, however, have proved that the afferent nerves from these viscera come into synaptic relation with the

---

*From the Rectal Clinic, University and Bellevue Medical College.
*Read before the Section on Gastro-Enterology and Proctology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

somatic afferents in the ganglion of the posterior nerve root and also in the lateral horn of the spinal cord (as shown in the accompanying diagram).

It seems plausible, therefore, to assume that these abnormal afferent impulses from the viscera lead to the stimulation of somatic afferents by creating an irritable focus in the posterior spinal ganglion, and that, the function of sensation being more commonly utilized in reference to the somatic afferents, the irritant stimulus is referred in consciousness, not to its true source but to the place from which such stimuli are habitually received, and hence the irritation is referred to the skin of the area supplied by the particular somatic afferent nerve affected. This is a transference of sensation which is exactly analogous in principle with the misreference of pain; but that it is not a reflex must be evident from an examination of the anatomic facts.

Now, in applying this hypothesis to the particular instance of pruritus of the anus, attention is drawn to the following facts of anatomic structure:

The pruritic zone is supplied by sensory nerves which have their origin in the first four sacral segments. These segments are in intimate neural connection not only with the pelvic viscera but also with the other abdominal viscera. It will be remembered that the third, along with the second or fourth sacral nerve, in addition to gray rami communicantes to the sacral autonomics, sends a large, white ramus communicans or visceral branch direct to the pelvic plexus and viscera. The intimate connections between the various plexuses, the hypogastric plexus and the aortic plexuses bring the superior and inferior mesenteric plexuses into close relation with these sacral segments.

The afferent nerves from the viscera have long been assumed, first by Dogiel and later by others, to end their travel centripetally by coming into synaptic relation with the cells of the posterior spinal ganglion by means of the white ramus communicans; or, by means of the same channel, they may pass through the posterior spinal ganglion and end in the lateral horn of the spinal cord in synaptic relation with the commissural cells of the intermediolateral tract at that level or some higher or lower level. The sympathetic neurons, in contradistinction to those of the central nervous system, have been shown to come into multiple relations with the various segments. It is thus readily seen that this transference of sensation may come in segments apparently removed from the source of afferent visceral stimuli.

Clinical observation of the frequent association of visceral disease can thus be linked in a very logical manner with this manifestation of transference of afferent stimuli and their consequent misreference of localization. This phenomenon is evidenced clinically as pruritus of the anus of the indirect type or anal pruritus.

The fact that it is an indirect pruritus is clearly demonstrable by its continued existence after the tissue of the pruritic zone has been thoroughly infiltrated with a local anesthetic, after sacral nerve blocking or after superficial neurotomy.

In answer to the question which probably presents itself as to why such a transference of sensation is not evidenced as pain, it must be recalled that pain, like other sensations, has a definite threshold. If we assume that the irritative stimulus which produces the transferred impulse causing the sensation of pruritus is below that threshold, and hence incapable of producing the sensation of pain, we can readily conceive how it is appreciated in consciousness as an irritation to which we have given the name of itching or pruritus. As a matter of clinical fact, these patients with pruritus will frequently tell us that at some time the pruritus becomes so intense that it actually does pain them, and in such cases I assume that the threshold of pain has been crossed.

To recapitulate: I believe that all cases of pruritus of the anus can be clinically divided into two classes: The one, a direct pruritus (pruritus ani) due to the direct irritation of the peripheral nerve endings in the pruritic zone, in which cases the source of irritation actually causes a primary pathologic condition whose direct nature can be demonstrated by the abolition of pruritic sensation by local anesthetization or superficial neurotomy; the other, an indirect pruritus (anal pruritus) due to the perception of the pruritic sensation which in consciousness is referred to the pruritic zone, an area which is, at the inception of the pruritus, devoid of any pathologic condition at all. This phenomenon is due to the transference of an irritable stimulus from the visceral afferent nerves to a normal somatic afferent nerve channel or pathway, and the consequent misreference or error in localization of the sensation.

This indirect pruritus, although devoid of local lesions at its inception, induces a desire to scratch which results in the pathologic changes previously noted; namely, first, a traumatic, chronic dermatitis, and in many cases, secondly, an infective chronic dermatitis. These secondary pathologic changes in the tissues of the pruritic zone lead to an added component of direct pruritus. As a matter of clinical fact, sooner or later in all these cases of indirect pruritus there is superimposed the element of direct pruritus.

In the type of pruritus I have just described, indirect pruritus, local therapeutic measures are decidedly not indicated unless the patient's efforts at relief, such as scratching and rubbing, have induced a direct pruritus either of a mechanical or an infective nature. It is decidedly illogical to expect local operative procedures or topical applications to remedy a condition symptomatic of visceral disease. Where local disease has been induced, it must, of course, be treated; but we must bear in mind that it is a condition of effect rather than a primary causative factor.

Since the prevailing method of treating these sufferers is chiefly by means of treatment applied to the pruritic zone, I urge the recognition and acceptance of this interpretation. Until the treatment of these cases is guided by this, it must continue futile in that very definite percentage of cases of pruritus of the anus which have an etiologic relation to chronic disease of the abdominal and pelvic viscera.

540 Park Avenue.

## ABSTRACT OF DISCUSSION

DR. W. M. BEACH, Pittsburgh: Pruritus ani is a most persistent symptom, and very bolshevistic. There are a certain number of cases that respond to the usual treatment as practiced by surgeons and proctologists, and a certain number that do not. Perhaps we can cure by the ordinary methods of subcutaneous division, and other means, in the neighborhood of 60 per cent. Forty per cent. will persist in spite of what we do. I think that the work Dr. Montague is doing may help us out on that 40 per cent., in which the symptoms are so persistent and the cause so remote. We all know that it is due in great measure to a low grade infection, but there is a neurotic element to consider in the etiologic considera-

tion of the subject. It seems to me that Dr. Montague is doing a good work in establishing these fundamentals in reference to the cause of pruritus ani. This bacteriologic research work is a subject that I do not feel qualified to discuss.

DR. F. C. YEOMANS, New York: I should like the doctor to explain how he differentiates between pruritus ani, so called, and the cases that I referred to?

DR. MARY D. ROSE, New York: I should like to ask how he explains pruritus ani in diabetes.

DR. R. A. WHIFFEN, San Jose, Calif.: I have known many cases of pruritus ani to occur during the menopause. I should like to get some explanation of that.

DR. J. F. MONTAGUE, New York: My attitude toward the entire subject of pruritus of the perineum has been to consider it as a problem in diagnostics rather than a problem in therapeutics. Unless we know what the component conditions are that we are dealing with we certainly cannot hope to treat the disease successfully in its entirety. The differentiation of these cases into either a direct or an indirect type cannot be made by a casual examination of the area to which the symptom is referred. At Bellevue Hospital I have a clinic in which I treat nothing but cases of pruritus ani. When a case presents itself I initiate a series of examinations, first of the perineal region, that is, the area to which the pruritus is referred, and then proceed with a complete proctosigmoidoscopic examination. Should I fail to find a sufficient pathologic cause in these regions, I then make a complete physical examination. It is my opinion that a definite conclusion in regard to a condition such as this cannot be reached unless a thorough physical examination is made. Many urge the importance of a rectal examination in connection with general physical diagnosis, and I should like to insist in a similar manner on the importance of a complete physical examination in all cases of pruritus of the perineum. If sufficient local cause for the pruritus is found, treatment may be instituted on that basis. There are certain causes that will induce a direct pruritus. If treatment after the correction of local pathologic conditions is not successful, we can be fairly certain that there is some hidden visceral cause. I generally do not wait until we arrive at this point, but make a complete physical examination to begin with. I thus frequently detect visceral pathologic changes at the start, and their removal or correction brings about a prompt cure of the pruritus from that source. The explanation that I offer for the occurrence of pruritus ani and vulvae in diabetes is very simple. It is asserted that these conditions are due to an excess of sugar in the blood of a diabetic patient. Such a statement is manifestly illogical; for, if it were incident to the circulation of an excessive amount of sugar in the blood stream, we would not get a localized pruritus, such as these conditions are, but rather a generalized pruritus as we do in urticaria. When we consider, however, that in cases of diabetes mellitus the liver is usually considerably enlarged; that dilatation of the stomach is common; that a diffuse nephritis is often present, and that the constant lesion of the disease is a chronic interstitial pancreatitis; we can readily conceive the generation of enough afferent, abnormal visceral stimuli to cause an indirect pruritus referred to its appropriate anatomic area, i. e., the perineum. That is my explanation of the cause of localized pruritus in diabetes. By their efforts to relieve by scratching and rubbing, patients may induce a chronic mechanical or infective pruritus; but the fundamental pruritus in these cases is an indirect pruritus, and cannot be relieved by treating merely the symptoms.

DR. SIDNEY K. SIMON, New Orleans: I have had occasion to observe a case of severe diabetes in a middle-aged woman, the main clinical manifestation being a very severe, almost intolerable, form of pruritus ani. Under the insulin treatment, the pruritus vanished almost magically. When the blood sugar ran up over 25 per cent. she immediately had a return of the pruritus. There seemed to be a direct relationship between the hyperglycemia and the pruritus.

DR. MONTAGUE: How do you presume that insulin affects diabetes favorably—by what mechanism?

DR. SIMON: There is relief in the hyperglycemic state.

DR. MONTAGUE: My reason for asking you that is that insulin therapy is in rather an embryonic state at present. Insulin supplies a substance that relieves a local pathologic condition in the pancreas. Insulin undoubtedly relieves or stops the progress of that pathologic condition. No one knows exactly how insulin works. I believe that its beneficial powers are exerted through the action of the pancreas. So far as hyperglycemia is concerned, it is entirely illogical to assume that hyperglycemia would cause localized pruritus. If we contend that the blood that contains the toxin circulates throughout the entire mass of the tissues of the body, and selects only a certain few of them for action in the hyperglycemic blood, we are straining the theory of the selective actions of drugs a little, if we assume that all of those tissues are normal. If we do not assume that they are normal, then pruritus is secondary, and not primary. But I do not believe that the pruritus of diabetes is due to the hyperglycemia. Not all patients with diabetes have pruritus, but they all have hyperglycemia.

DR. JAMES T. PILCHER, Brooklyn: It would certainly appear that the author strains himself far more in trying to account for pruritus ani through transferred nervous stimulus from a stretched liver or liver capsule than the observer who attempts to account for it through the condition of hyperglycemia. It is rather difficult to account for the fact that the irritation of a plexus high up in the cord should so frequently skip all the intervening plexuses and attack merely that conveying impressions to the perineum. It would further seem that the reader of the paper has obtained a wrong conception of the action of insulin. I do not think that its sponsors claim any action on the pathologic condition of the pancreas itself, but merely that it supplies a chemical substance to the blood to further the oxidation of the retained sugars. The fact is that many patients exhibiting sugar in the urine do not invariably show a sclerotic or enlarged pancreas; some that have been surgically explored show a very marked deficiency of glandular substances. In examining a large number of patients operatively explored for concomitant upper abdominal trouble, it was found impossible to surmise invariably the condition of the pancreas preoperatively. I myself am of the opinion that pruritus ani in those conditions in which there is a concomitant diabetes present will be found to be the result of the toxic condition of the blood and most probably caused by the hyperglycemia or the accompanying acidosis; and while it is not a simple question to answer, it will appear a much easier explanation than that of a nervous reaction due to stretched capsule over the pancreas or liver.

DR. J. F. MONTAGUE, New York: I am sorry that I offend Dr. Pilcher if I appear to strain myself in explaining this condition from the standpoint of neural physiology. The fact of the matter is that if we accept the theory of the misreference of pain we must, by the same token, accept the interpretation that I propose for indirect pruritus. I myself cannot conceive how blood laden with an irritating principle and circulating throughout all the tissues of the body can affect the sensory nerve endings in certain skin areas and leave unaffected homologous sensory nerve endings in other skin areas unless we grant a local pathologic condition in such area to begin with. If we grant that, then we must also grant that pruritus so produced is secondary and not primary. In regard to the pathologic changes noted in the pancreas: I did not state that we always have an enlargement for the reason that the process is a chronic pancreatitis and the inherent quality of all connective tissue is to contract, so finally we get a sclerotic condition bordering on atrophy. But in my argument I stated distinctly a departure in size, which may be an increase or decrease, and I believe that that process, which, you will grant, is abnormal, is sufficient to cause the stimuli that are present. I do not believe we are straining our imagination, because I have demonstrated this to my own satisfaction clinically and in the laboratory, and my experiments have been along the lines of Head and Rivers in explaining the misreference of pain.

# DENTAL IMPACTIONS AND THEIR SEQUELAE *

E. F. THOLEN, M.D.
LOS ANGELES

The majority of impacted teeth that came under my observation during the last three years caused no pathologic changes or symptoms that could be detected by clinical or roentgenographic examination. The minority, however, which I now wish to report, namely, a series of eighty-four cases, gave rise to numerous serious and puzzling conditions that required the removal of the teeth and of the pathologic reactions to which they gave rise. In forty-eight from among these cases, the conditions were due to infection; in twenty-three, the symptoms could best be explained by the theory of reflex disturbances due to nerve pressure. In thirteen cases, I saw the patients because of postoperative complications.

In the group of forty-eight cases there were nine in which local infection of the overhanging soft tissue or gingival involvements resulted in osteomyelitis, periostitis and necrosis. In one of these there was a temporal abscess that was cured by free drainage, and another resulted in infection of the temporomandibular joint, with necrosis of the temporal bone. This case terminated fatally.

In thirty-five instances there were evidences of rarefaction of bone about the teeth, and the patients were referred to me because of some general infection. This included arthritis, neuritis, iritis, gastric lesions and asthenia.

In two patients in whom maxillary sinusitis complicated upper third molar impactions, lodged high in the antrum wall, the removal of the teeth and intranasal drainage of the antrums cured the cases.

One case of chronic lymphadenitis of the right submaxillary group was cured by the removal of an impacted lower third molar.

This series includes one case of a deeply impacted partially developed third molar lodged under the second molar and communicating with the socket of the latter through a small fistula. This condition caused a severe persistent secondary anemia. The blood picture improved greatly by uncovering the tooth and subsequent drainage. It is my intention to remove the tooth as soon as the condition of the patient allows.

The second group of twenty-three cases included only those in which the reflex symptoms were relieved by removal of the impactions that appeared to be the causative factors. These included two of facial paralysis which showed no other etiologic factors and were cured within two months after removal of lower third molars on the same side.

There were ten cases of neuralgia of one or more branches of the fifth nerve. There were four cases of cysts, three being located in the mandible, and two arising from impacted bicuspids.

There was one case of severe headache in a woman, aged 20, in whom brain tumor had been diagnosed by an eminent authority. She was cured by the removal of all impacted third molars. In two cases of migraine, the removal of impacted teeth gave no relief. There were three cases of absorption of roots and trophic changes in adjacent teeth, and one of epileptiform attacks in a youth, aged 17 years, who was completely cured by removal of all third molars.

I am including a group of thirteen cases in which the patients came to me for postoperative work. Nine showed acute cellulitis about the submaxillary and pharyngeal regions which were relieved by drainage. Two were accompanied by fracture of the mandible, resulting from the operation, and in six there followed necrosis. One had persistent neuralgia of the left premaxillary region, and two persistent anesthesia of the inferior dental nerve. As a result of these complications, five patients were the worse for operation, and suffered greatly for a while afterward.

Of the eighty-four cases reported, forty-five were of the mandibular third molars (one of which included the second molar); thirty-two were of the upper third molars (one being locked in the second molar and requiring its removal); six were upper canines and one lower bicuspid. In twenty-eight there were multiple impactions. One of the multiple cases showed sixteen impacted teeth that gave no general symptoms and had never been painful. Examination showed two fistulas, which exuded a straw-colored fluid. They were easily removed, for the bone was cancellous about them.

## CONCLUSIONS

It is apparent that it is not of so much importance that impacted teeth are present, but it is what they do to the system that counts.

The great majority of impactions do not give rise to pathologic lesions.

A minority give rise to very serious lesions.

It requires close study of each case and weighing of all factors concerned to diagnose these cases properly. While the roentgenogram is of great diagnostic value, it is often overrated and a great injustice done these patients by relying on it exclusively.

The seriousness of the operative treatment is underrated, and the treatment often results in traumatic lesions more serious to the patient than the original impaction.

Conservatism should be the rule, except in those cases in which the patient is seriously menaced, or in which there are good reasons for believing that the tooth is actually causing trouble.

---

## ABSTRACT OF DISCUSSION

DR. H. A. POTTS, Chicago: There is no question that these teeth do produce serious trouble, but, as Dr. Tholen stated, simply because they "are" does not mean that they should be removed. The question is, What trouble are they causing? One of the results is the mutilation in their removal. We all have seen patients in serious condition after such removal. I think it is best to remove teeth that communicate with the mouth, and the teeth that are in contact with and are abrading the roots of other teeth. Reflex pain may at times be relieved by their removal. Then, too, comes the consultation with the medical men. If some of these obscure conditions are present and all other sources have been eliminated, then I take out those also; but the simple fact that a tooth is unerupted does not call for its removal. There is a normal bone absorption about the crowns of all these teeth. Regarding a great many of these things, I try to look at them in a practical way. For various reasons, most of us cannot afford to carry a five hundred thousand dollar life insurance policy, and consequently I am content to bear some of that risk myself because I cannot pay the premium. If you want to hand a five hundred thousand policy to a patient—almost anybody I will say—he has to pay the price of that policy and that means the removal of teeth which have lost their pulps, which I do not think is the proper thing; it means

* Read before the Section on Stomatology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

removal of the appendix, excising the gallbladder, etc. Many people have died following the infection of a hangnail or an ingrowing toe-nail. We should use a little horse sense in all these things. One hundred per cent. prophylaxis is nonsense, except for the individual who is at the time suffering from some serious malady which we have reason to think had its origin in some focus of infection.

DR. S. B. FONTAINE, Oakland, Calif.: I agree with Dr. Tholen. Impacted teeth are too often accused as a source of infection. When patients have signs of neuralgia or other disturbances, and when a definite pressure against the opposing tooth can be seen, extraction is warranted. This is especially true of cuspids impacted in the palate. When there is no definite pressure, no definite area of infection or necrosis, I do not see any good reason for surgical intervention. A case was referred to me, within the last few weeks, for the removal of an embedded cuspid lying over the apexes of three vital teeth. This patient had no symptoms of pain; the embedded tooth had a slight rarefaction around its crown due to the dental capsule. There was no evidence of pressure. What would have been the result and what damage would follow the removal of that tooth? It would absolutely have devitalized three perfectly normal teeth, and subjected the patient to a useless operation. It would have been impossible to remove that cuspid without having to devitalize those three teeth, in spite of careful surgery. Hence, I again commend the care and caution that Dr. Tholen has so well expressed—before we operate on impacted teeth we should be sure we are doing the patient definite good, and careful that we are not doing irreparable harm.

DR. H. A. TUCKEY, San Francisco: Relative to operating on badly embedded or unerupted lower third molar teeth, when the mutilation will be so great and the inevitable anesthesia following traction on the inferior dental nerve are important factors in the prognosis of these cases, it may be well to suggest the partial removal of bone over these teeth and give them a year or two to come up, if they will, and forestall a mutilating operation. When these cases are referred to men doing special work, and something must be done immediately, the suggestion of partial surgery in some of these cases is important.

---

# CHANGES IN TOOTH STRUCTURE RESULTING FROM DEFICIENT DIETS *

JOHN A. MARSHALL, D.D.S., PH.D.
SAN FRANCISCO

The present report deals with alterations in the teeth of dogs, which have been produced by imposing restricted diets. It is, in a sense, preliminary in nature, for the results have been so striking that a repetition of the experiment is advisable before complete data can be compiled and presented.

That portion of the problem which includes a study of the diet and changes produced in the bony growth of the animals will be reported elsewhere. My principal concern lies with a statement of changes produced in the teeth. My participation in this research has been secondary in that I have had no direct responsibility in working on the food or excreta of the animals. Through the courtesy of Dr. W. P. Lucas, professor of pediatrics, University of California Medical School, and Dr. Martha Jones of the George Williams Hooper Foundation for Medical Research, I have had the opportunity of examining the skulls of the animals after necropsy. Since the details of the diets are to be reported later by Dr. Jones, I wish merely to point out the fact that the changes in diet of these animals were concerned mainly with the content of calcium and phosphorus. They had vitamins and sunlight, but apparently insufficient or improperly proportioned inorganic elements.

The history of the animals may be of some interest. Nine puppies of the same litter, born Sept. 10, 1921, were segregated and fed a restricted diet from about September 25 until they were killed in May and June. An examination of the specimens has revealed at least two abnormalities in the teeth: (1) marked delay in dentition, and (2) relative absence of dentin, although there is a normal amount of enamel.

It is well known that dog and man are similar in that they erupt both deciduous and permanent teeth, and the shedding of the deciduous set ordinarily occurs without any observable discomfort to the animal and at fairly regular intervals. In the specimens, the deciduous teeth were apparently normal in size and shape, but they were not shed in the usual manner. Furthermore, it has been observed that in the permanent set the incisors, cuspids and molars of the mandible were more generally affected than the corresponding teeth of the maxilla.

This was emphasized in Dog 7, and in addition it was noted that the lower permanent incisors were malposed and presented the appearance of arrested growth, so that the position in the arch, as well as contour and size of the teeth, was influenced. The peculiarity of contour is shown by an area near the tip of the crown, which is bounded by a distinct constriction and which serves to differentiate the crown into two parts. It is quite obvious that the calcification of the tip of the tooth proceeded at first normally and then ceased altogether, or at least became very retarded. This cessation of normal growth is characterized by a ring and a corresponding constriction, which suggests the beginning of hypoplasia. Calcification was later resumed, but the period of subnormal growth remained definitely inscribed in the tooth structure. In the same dog, the right cuspid is anomalous. While the position of the latter is apparently normal, the changes in form already described are clearly manifest. On comparison of the maxilla with the mandible, it is found that these variations in the degree of calcification are less marked in the upper jaw. As an outstanding feature, however, the retention of the deciduous teeth must be mentioned.

In Dog 8, the bones have undergone such marked degenerative changes that they can easily be cut with a pocket knife, and the mandible on exhibition has been cut in this manner on both surfaces. The maxilla exhibits even more striking alterations. Nearly all of the teeth have lost their attachment to the peridental membrane, and as a consequence are very loose. Both the deciduous and the permanent lower cuspids are in place in the arch; although the left deciduous cuspid is quite firm, the permanent cuspid on the opposite side is fully erupted, but at necropsy was so loose that it could be extracted with the fingers.

The surfaces of the teeth are rough in some cases, as though they had been placed in acid. In nearly all the animals, some abnormality is evident to a greater or less degree. Since the resorption of the roots of the first set of teeth is the normal result of body growth, it is apparent that a marked delay in the process must be due to an alteration in the normal development of the animal.

In many of the specimens, the permanent set showed evidence of a profound disturbance of a different character. On extraction of some of the teeth, notably the

* From the University of California College of Dentistry.
* Read before the Section on Stomatology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

cuspids, it was found that the dentin even in the crowns had undergone a noteworthy change. Underneath the enamel cap was a definite mass of soft tissue closely resembling pulp, but there was no observable normal dentin between the enamel and this fibrous area. If the dentin had been absent only in the roots of the tooth, it might be supposed that there was a definite delay in the formation of the root; but the lack of calcified dentin in the crown portion is not readily explained. Furthermore, the soft tissue beneath the normal enamel was more firm than pulp tissue, and was highly vascular. It appears that these abnormalities were the outcome of a process of rarefaction which affected the whole bony framework of the dog. This is further exemplified by examination of the long bones, in which a definite osteoporosis had developed.

The microscopic examination of the tissue which had replaced the dentin is also of interest. On section, it was found that both the inorganic and the organic portions of the dentin had been altered to such an extent as to render their identification impossible. Neither the dentin tubules nor tubular contents remained. Even the organic matrix, which is very characteristic in the decalcified section, had undergone profound changes. In its place there was loose areolar and fibrous connective tissue, richly supplied with fine capillaries which freely anastomosed throughout the structure. At various places in the section, there were inflammatory tissue elements which indicated that active processes of tissue change were occurring at the time of necropsy. These facts throw doubt on the proper classification of this tissue Is it dentin or pulp? From its relation to enamel, it is obviously dentin; but, from its histologic structure, it resembles pulp.

To what extent this research may be correlated with clinical dental lesions is not yet apparent, but perhaps it points the way for more extensive effort. If, by relatively simple diet experiments, it is possible to produce such profound changes in dentin in a short space of time, how much more significant becomes the study of the influence of diet on the growth cycle of the organism. We are a long way yet from a clear understanding of all the changes occurring during the absorption and utilization of lime and phosphorus by the body. That there is a definite correlation with functional activity even of muscle tissue has been proved beyond question. The relationship of the hard structure of the body is also well known, but the control exercised by dietary factors on calcification is still undetermined. Although I am at present at a loss to interpret definitely these results, I hope that sufficient funds will be provided for a more concentrated experimentation along these lines, and that some additional facts bearing on calcium and phosphorus metabolism may be demonstrated. One of our many problems today in the wide field of operative dentistry is that which is related to this question of absorption, utilization and excretion of inorganic salts. Dental caries, on the one hand, may be an example of an insufficiency; while, on the other, the condition commonly denominated as pyorrhea may indicate a degree of abnormal excretion of these substances.

Within the last few months, there has been published a series of reports by McCollum and Grieves and their co-workers,[1] dealing with studies in experimental rickets. The authors have shown "that the internal structure of the skeleton of the rat may be changed at will by varying the ration which the animals received." In other words, bone is a tissue easily and definitely influenced by nutritional conditions. According to their experiments, three factors are concerned in producing rickets: (1) a new vitamin, found in fats, but not identified with the so-called fat soluble A; (2) the calcium content of the food, and (3) the phosphorus content. Those diets which exhibit excessive amounts of calcium, but are low in phosphorus and vitamins, produce rickets. Likewise, a diet with a satisfactory amount of phosphorus and vitamins, but deficient in calcium, produces rickets. Coincident with the development of rickets, there have appeared also, definite oral manifestations. These were more noticeable when the diet was low in lime, protein and vitamin, and were least noticeable when the animals were maintained on a diet either high in calcium and low in vitamin, or high in both calcium and cod liver oil vitamin.

The dental lesions noted are described as, first, "caries-like" defects; second, loss of the attaching tissues of the teeth, or of the teeth themselves; third, fracture of teeth, and, finally, pulp exposure and the production of osteodentin. McCollum states that "severe oral disease may result from diets which are only relatively defective, where the disturbance appears to be out of all proportion to the cause." This outspoken opinion, based on the most careful experimentation, must be given due consideration, for it indicates, indirectly, that changes in tooth structure may occur either during or after the formative period of the teeth. The systemic conditions of the animal may be so altered as to produce caries-like lesions, or conversely, to protect the animal from the disease.

It is suggested that this experiment of Dr. Lucas and Dr. Jones will throw new light on the results reported by McCollum, and that we may hope for a more complete understanding in the near future of the whole story of calcium metabolism.

1. McCollum, Simmonds, Kinney and Grieves: Bull. Johns Hopkins Hosp. 33: 202-215 (June) 1922.

## ABSTRACT OF DISCUSSION

Dr. H. A. Potts, Chicago: I should like to ask Dr. Clark whether he can correlate some of the work of Dr. G. V. Black. I was associated with him in the preparation of his last book, and his conclusions were that the precursor of calculus formation was the rich protein diet. That was arrived at in this manner: We made collections of parotid secretions after giving a dozen or more students a heavy protein meal. In about twenty-five or thirty minutes after the meal, the flow of saliva started, a perfectly clear fluid dropping into a test tube. Then came a milky drop of saliva, and that would continue for from twenty-five to forty minutes, and during that time one could see, by the refraction of light, a cone built up on that cover glass. This was calcoglobulin, which later became a calculus.

Dr. Guy W. Clark, San Francisco: I think that the explanation is, you were taking your saliva at the time of maximum absorption. The digestive processes were going on at high speed. The blood is then rich in all of the constituents, much richer than it is in a postabsorptive state, and would naturally contain more of the various mineral constituents. I think that it would be possible even to demonstrate the actual enrichment of saliva, just as we do with the blood. These saliva samples are collected every week at the same hour, just two or three hours after meal time, so that we have them after that peak has been obtained from the digestion, and we are getting what we feel is a nearly normal resting level. Saliva is a very complex and variable mixture, and its composition depends on which glands are secreting at the time the sample is obtained. We have made a com-

plete analysis of the blood at the same time, and perhaps we shall find that there is some correlation. For instance, in one case a very high chlorid content was found in the blood the day we found a high chlorid content in the saliva. Whether there is a definite correlation between blood and saliva, I cannot say at this time. The work is not complete.

DR. H. A. POTTS, Chicago: I neglected to say that seemingly from Dr. G. V. Black's previous investigations, the diet might have some bearing on calculus formation, as it seems that persons who are used to the high protein diet readily excrete those products which make up calculus. It means that after a heavy meal the blood is surcharged with these products of digestion, and in those persons one would find a tendency to the deposition of calcium which might be used in the formation of calculi in other parts of the body—renal calculi, etc.

DR. JOHN H. MARSHALL, San Francisco: I can not discuss the problems of the physician. It has been the practice to reduce calcium in the diet of a pregnant woman with the hope that the bones of the child will be so soft that its birth will be made more easy. If the diet is going to be deficient in calcium, where is the calcium coming from for the growth of new bone? In these animals we purposely restricted either calcium or phosphorus, or, at any rate, we altered the proportion of calcium to phosphorus with the result that the dentin suffered a definite change.

---

# CHEMICAL SOLVENTS USED IN DISSOLVING FOREIGN SUBSTANCES IN URINARY BLADDER

## PARAFFIN, BEESWAX, GUM AND URETHRAL PENCILS *

HAROLD L. MORRIS, M.D.
AND
CLARENCE I. OWEN, M.D.
Assistant Attending Urologist and Attending Pathologist, Respectively, Grace Hospital
DETROIT

Foreign bodies gain entrance into the urinary bladder by way of two routes—first, through the urethra or ureter, and secondly, as the result of trauma or operative procedure. Of the many foreign bodies found in the bladder, we are interested only in those which are capable of being dissolved in vivo and which are not infrequently encountered, such as paraffin, beeswax, gum and urethral pencils. In this respect, modern textbooks on urology advocate the removal of foreign bodies, if possible, through the urethra by means of the Kretschmer rongeur, lithotrite, grasping instruments through the operating cystoscope, or by means of suprapubic cystotomy.

The inability to grasp and remove, through the urethra, foreign bodies such as paraffin, beeswax, gum and urethral pencils was the basis of this study to establish, if possible, satisfactory treatment for cases of this kind.

The reasons for persons passing these substances into the urethra and bladder are many and varied, including curiosity as to where the urethra leads, the relief of sexual desires, the dilation of strictures, and the correction of enuresis.

Work along this line of endeavor is not entirely new. On searching the literature, we find as early as 1907 that Lohenstein dissolved beeswax in the bladder by use of benzin. He injected into the bladder 15 c.c. of benzin and let it remain for forty-five minutes; then he added 25 c.c. for ten minutes. The next day the injection was repeated, the result being the voiding of the dissolved and softened mass without any serious consequences to the patient.

Hottinger,[1] in 1919, reported a case of paraffin in the bladder, and used xylene, as he thought xylene was more antiseptic and cleaner than benzin. He first irrigated the bladder with water; then, leaving the bladder practically filled, he injected 12 c.c. of xylene and had this retained for four hours, during which time the patient complained of burning and other unpleasant sensations. He advised the patient to massage the abdomen—the effect thus obtained being like shaking the solution in a test tube. At the end of four hours, the patient voided a chyle-like fluid, and cystoscopy showed a clean bladder, free from paraffin. A rapid recovery from cystitis followed.

Caples,[2] in 1920, reported a case in which cystoscopy showed paraffin in a mass within the bladder and firmly lodged in the upper margin. After three unsuccessful attempts to remove it with the cystoscopic rongeur, pieces of the original candle, measuring 1 cm., were cut off and put in a series of test tubes. Five cubic centimeters of xylene, kerosene, liquid petrolatum and gasoline, and also varying proportions of other solvents, were added to the test tubes. The tubes were then incubated at a temperature of 37 C., and from time to time a little urine was added to each one. The cubes in gasoline and xylene were dissolved in ten hours, in kerosene in eleven hours, in liquid petrolatum in thirty-six hours, and in a solution of 33⅓ per cent. of gasoline and liquid petrolatum in twelve hours. The latter could be held in the mouth several minutes without irritation, while the others were more or less irritant. Through a retention catheter, 125 c.c. of gasoline and liquid petrolatum at 110 F. was injected into the bladder. This was easily tolerated and retained comfortably for one and one-fourth hours. After this injection, the retention catheter was found to be no longer necessary. Six subsequent injections, each of 125 c.c. and at a temperature of 110 F., were given. These were retained for intervals varying from two to five hours. The entire treatment covered a period of three days, and the total time of exposure to the solvent was seventeen hours. The urine and the solvent were collected after each injection and, on being chilled, paraffin was found to have been precipitated in decreasing amounts down to the fifth specimen. As the sixth and seventh specimens gave no precipitates, the injections were discontinued. In the meantime, the patient's symptoms abated rapidly, and two days after the last injection, his condition was normal.

Geyer,[3] in 1922, reported a case of paraffin in the bladder. The patient brought to the hospital the remaining piece of candle, which was completely soluble in xylene. Fifty cubic centimeters of xylene was instilled into the bladder of the patient. After half an hour he voided urine that brought to light a great mass of disintegrated paraffin. An injection of hot salt solution came back clear. By the use of a mild antiseptic treatment, the irritated region healed up without further complications.

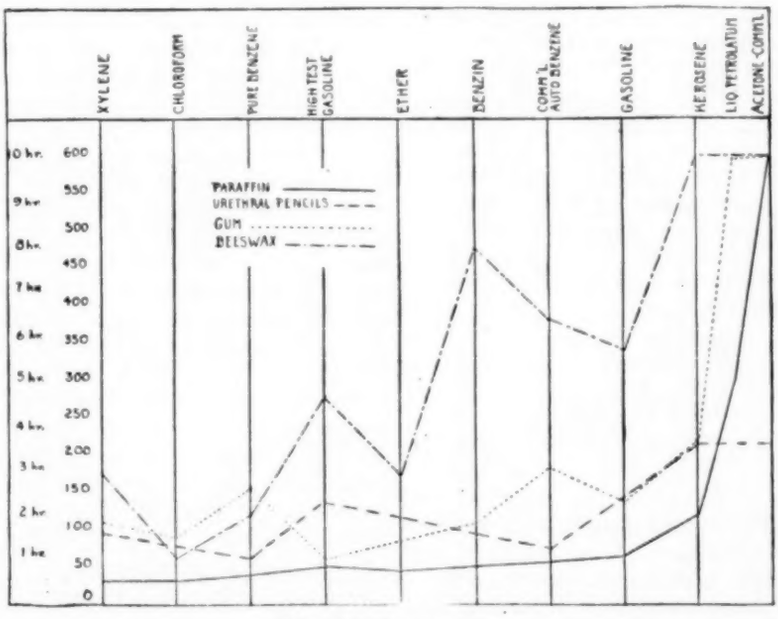
Monis,[4] in 1922, reported a case of paraffin in the bladder. The urine was cloudy, and contained leukocytes and red blood corpuscles, but no casts. The

* Read before the Section on Urology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Hottinger, R.: Cor.-Bl. f. schweiz. Aerzte **49**: 875 (June 14) 1919.
2. Caples, B. H.: Surg., Gynec. & Obst. **182**: 506 (May) 1920
3. Geyer: Deutsch. med. Wchnschr. **48**: 1284 (Sept. 22) 1922.
4. Monis: Ztschr. f. Urol. **16**: 407, 1922.

capacity of the bladder was 150 c.c. The cystoscopic examination showed a foreign body, dark and shimmering, floating around in the fluid. The bladder mucous membrane was diffusely inflamed and dark red, and in some places there were small ulcerations and bits of coagulated fibrin. The ureteral orifices were in normal position, and otherwise the findings were negligible. A diagnosis of foreign body in the bladder was easily made. As the piece of paraffin floated about in the bladder, one could grasp it with a lithotrite, although the grip would not hold and pieces would break off. So the chemical method was used. After a morphin suppository and after a thorough cleansing, the patient was given 30 c.c. of pure benzin by injection into the empty bladder. The patient held this for ten minutes, and then, when the bladder was emptied, there came the aroma of benzin along with the dissolved wax. During the day, small particles of paraffin passed in the urine. After three days, since cystoscopic examination revealed the fact that there were still portions of a foreign body in the bladder, the same procedure was repeated in detail. After this, the control cystoscope showed an entirely normal bladder as far as freedom from foreign bodies was concerned. After several washings of the bladder, the patient became entirely cured and left the hospital.

Melen,[5] in 1923, reported a case of crayon pencil in the bladder which he successfully dissolved with 30 c.c. of liquid petrolatum heated to 105 F. and injected into the bladder. This was retained for one hour and forty-five minutes without much discomfort. Then the patient voided 300 c.c. of urine. The gasoline floated on the top of the container, and many red particles of crayon settled to the bottom. Six hours later, the injection was repeated and was retained for two hours without discomfort. The patient was up and about, coming to the office for treatments. On the second day of treatment, the voided urine contained many crumbs and fragments of crayon. During the act of micturition, the stream suddenly became interrupted, and the patient could not void. The next moment he passed a large, curved fragment, and at subsequent voidings the urine changed from red (particles of crayon in suspension) to straw color. No further injections of gasoline were given. Cystoscopy two months later revealed the bladder absolutely normal.




Power of solvents tested.

### POWER OF VARIOUS SOLVENTS

With this information at hand, with the exception of the case report of Melen, our first problem was to establish the solubility of paraffin, beeswax, gum, and urethral pencils under various conditions in vitro. This was carried out in the following manner: We chose as possible solvents xylene, "automobile" benzene ("Ford benzol"), pure benzene, liquid petrolatum, kerosene, gasoline, high test gasoline, ether, chloroform, benzin, and commercial acetone for gum, paraffin, beeswax, and urethral pencils. In an endeavor to simulate as nearly as possible conditions in the human bladder, all experiments were incubated at 37.5 C. and the containers agitated every five minutes. The paraffin and beeswax were made up into solid spherical 1 gm. balls, and the gum and urethral pencils were rolled into as nearly spherical shape as possible.

Our first study was with paraffin, and was conducted in this manner: To 1 gm. of paraffin was added 5 c.c. of xylene in Bottle 1; 10 c.c. of xylene plus 1 gm. of paraffin in Bottle 2; 15 c.c. of xylene plus 1 gm. of paraffin in Bottle 3; 25 c.c. of xylene plus 1 gm. of paraffin in Bottle 4, and 50 c.c. of xylene plus 1 gm. of paraffin in Bottle 5. These were placed in an incubator and agitated every five minutes, and the time of dissolving was noted.

Next we used the same quantity of paraffin and a like amount of xylene plus 25 c.c. of water in each bottle; these were then incubated, agitated every five minutes, and the time of dissolving noted. We then repeated the second experiment and used urine instead of water, the object being, in this addition, to determine whether either of these fluids made any difference in the time of dissolving, realizing that a foreign body in the bladder would have urine constantly coming down to mix with any solvent instilled.

In like manner, "automobile" benzene, pure benzene, liquid petrolatum, kerosene, gasoline, high test gasoline, ether, chloroform, benzin and commercial acetone were used, after which the solvents were used in a similar procedure with gum, beeswax and urethral pencils.

The result of this study is best shown by the accompanying chart. The solvents acting the most readily on paraffin were xylene, chloroform and pure benzene; on urethral pencils, pure benzene, "automobile" benzene and xylene; on gum, high test gasoline, ether and chloroform; on beeswax, chloroform, pure benzene and ether. These solvents are listed in the order of their respective dissolving power as observed by us.

### REACTION OF THE BLADDER MUCOSA

With this study completed, our next step was to show the reaction on the normal bladder mucous membrane of these various solvents which, theoretically, could be used. For this purpose, well and healthy adult female dogs were used that were apparently free of any disease and were not in heat. Our first work was to place in the bladder paraffin, gum and beeswax;

5. Melen, D. R.: Nonsurgical Removal of Paraffin in Urinary Bladder, J. A. M. A. **80**: 685 (March 10) 1923.

let that remain for twenty-four hours; then to inject the solvent, which was retained for from thirty to sixty minutes, allow the dog to live twenty-four hours, then kill it and perform a necropsy to determine the amount of foreign body left in the bladder and gross pathologic changes in the bladder wall. The dogs were first examined cystoscopically, and only those with normal bladders were used. The foreign body was then introduced and allowed to remain for twenty-four hours, at the end of which time the dog was again examined with the cystoscope and observation made of the degree of cystitis present; then the solvent was injected and retained longer than the previous experiments in the test tubes showed necessary (usually for one hour). The dogs were allowed to go free for twenty-four hours, and then they were again examined cystoscopically and the presence of foreign body determined. At this time the dogs were killed and their bladders obtained for studies of the gross and microscopic changes.

Paraffin in the bladder after twenty-four hours produced an acute cystitis with symptoms of frequency and painful urination.

Microscopic findings in the bladder of Dog 1 showed epithelial cells swollen, some denuded, and localized areas of congestion in the subepithelial tissues. There were no other changes. The injection of pure benzene did not apparently cause the animal very severe discomfort, the benzene being retained for forty-five minutes, when the dog was killed and the bladder showed a mild congestion and slight edema of the mucous membrane; however, no paraffin was present. The microscopic findings in the bladder of Dog 2 were a slight acute inflammation and edema of the submucosa.

On Dog 3, chloroform was used as the solvent for paraffin, the foreign body being entirely dissolved, although a rather severe cystitis was present; but, we believe, a large part of this could be explained by the trauma of repeated cystoscopies, for in the case of this animal it was not easy to pass the cystoscope because of an irritable disposition and a small urethra. The microscopic findings in the bladder of Dog 3 were marked edema and some congestion of the entire wall. On the mucosa the epithelium was necrotic, with cellular infiltration and diffuse chromatin. The subepithelial tissues were markedly edematous, with leukocytic infiltration. There was marked edema of the serosa.

With Dog 4, gum was used as the foreign body, and high test gasoline as the solvent, the usual symptoms of cystitis resulting from the foreign body. After the injection of high test gasoline, the animal exhibited only mild discomfort. It was killed twenty-four hours later. The bladder mucous membrane had numerous small hemorrhagic areas. No gum was present. The microscopic findings in the bladder of Dog 4 showed localized areas of necrosis of epithelium. Some areas were normal and intact. There was a marked edema of the subepithelial tissue, and some congestion of the remainder of the wall.

We placed in the bladder of Dog 15 1 gm. of beeswax and after twenty-four hours, injected into the bladder 50 c.c. of "automobile" benzene. This was retained by the animal for one hour, during which time very little, if any, discomfort was manifested. The dog was then released, returned to her pen and allowed to live for twenty-four hours longer. During this time she was fairly comfortable, suffered very little pain, had a good appetite, and was of a good disposition. At necropsy there was a dilatation of the larger blood vessels and congestion of the outer walls of the bladder. When the bladder was opened, it contained a few drops of bloody fluid, but no beeswax. The mucous membrane was edematous in spots, there being a generalized cystitis.

Having proved that these solvents were capable of dissolving foreign bodies of this character in a much shorter time than heretofore thought possible, we were then desirous of knowing just the amount of pathologic changes produced in the bladder by these solvents. We therefore took a number of dogs whose bladders were normal cystoscopically, and injected the solvents, which were retained for from one to two hours. The dogs were then killed, and studies were made of the gross and microscopic changes.

On Dogs 7, 6 and 5, we used xylene. Dog 7 retained the xylene for one hour, and at death it was still present. The mucous membrane was congested and the blood vessels markedly dilated. The microscopic findings in Dog 7 were: mucosa, intact; only slight cellular swelling; marked congestion and slight edema of the subepithelial tissue; marked congestion of the muscular wall; marked congestion of the serosa, with exudation of leukocytes.

In Dog 5, the xylene was left for two hours, and at death the mucous membrane showed marked congestion with these microscopic findings: marked destruction of epithelium with loss of cell structure; presence of considerable diffuse chromatin; some edema of the subepithelial tissues, with some loss of structural outline; slight congestion of the remaining wall.

In Dog 6, the xylene was retained for two hours. The dog was then returned to her pen for twenty-four hours and, at death, the bladder was normal in size, but tremendously congested, with marked thickening of the mucosa, and with hemorrhagic areas. The larger blood vessels were dilated. The microscopic findings in the bladder of Dog 6 were practically the same as in Dog 5. There was more edema of the subepithelial tissue and more marked necrosis of the epithelium. Congestion of the wall was more pronounced.

On Dogs 8, 9 and 10, "automobile" benzene was used. Dog 8 retained the "automobile" benzene for one hour, and at necropsy the bladder contained "automobile" benzene. There were no gross changes. The microscopic findings showed a marked congestion of the entire wall, with edema of the subepithelial tissue. There was a local swelling of the epithelium.

With Dog 10, the "automobile" benzene was retained for one hour and thirty minutes. At death the bladder was distended with benzene and the outer surfaces of the bladder were congested. The large blood vessels were dilated, there being a generalized cystitis, especially in the base and fundus. The microscopic findings were marked swelling of the epithelial cells of the mucosa with loss of basement membrane, and leukocytic infiltration into spaces between cells of epithelium. There was some edema of the subepithelium. There was a generalized congestion of the vessels of the walls and serosa.

In Dog 9, the "automobile" benzene was retained for one hour, during which time the dog suffered considerably with tenesmus and urgency. The dog, being unable to retain the solution any longer, was released, and exhibited marked discomfort, with frequent attempts to urinate. This cystitis remained quite severe for the next twelve hours, gradually abating, and at the end of seventy-two hours the dog was again apparently her normal self. Since this reaction was the most severe encountered, we allowed this dog to live two months, in order that we might determine the permanent changes as well as the degree of regeneration of the bladder following such a severe reaction. She was then killed, and the bladder findings grossly showed hypertrophy of the muscular wall; microscopically, the bladder was normal.

In Dog 11, ether was used and retained in the bladder fifteen minutes, during which time it became very much distended and there were frequent passings of gas through the urethra. This dog suffered acutely, and she was immediately killed. The bladder was as large as a large grapefruit, and was filled with gas; the blood vessels of the outer surface were tremendously dilated. The gas was easily expelled through the urethra. The mucous membrane showed a very marked diffuse cystitis. Microscopic findings showed a marked thinning of the muscular wall, and generalized edema of the wall. Complete necrosis with loss of cell structure and chromatin was evident. There was tremendous congestion, with some exudation of leukocytes. The picture was that of a rapid escharotic.

Dog 12 had high test gasoline injected into the bladder. This was retained for one hour, during which time very little dis-

comfort was manifested. She was killed (the gasoline was expelled during anesthesia). The bladder was contracted and empty. The blood vessels were moderately congested, and the larger ones were markedly dilated. The mucous membrane was slightly congested throughout. Microscopically, there was an acute inflammatory reaction involving, principally, the mucosa. There was some denudation of epithelium, with considerable swelling of cells. The edema was marked. There was congestion of the vessels throughout.

Dog 13 had pure benzene injected into the bladder. This was retained for one hour and ten minutes. During this time little, if any, discomfort was manifested. She was then killed (the benzene was expelled during anesthesia). The bladder was contracted and empty. There was a slight dilatation of the large blood vessels of the serosa. The mucous membrane showed marked diffuse congestion, the larger blood vessels not showing. In some areas there were elevations the size of a split pea. A section of these areas revealed local swelling of the mucosa. Microscopically, there was a marked congestion of the entire wall. In the subepithelial tissue there was a marked localized edema with some leukocytic infiltration.

Dog 14 had chloroform injected into the bladder. During retention, there was very little discomfort. She was killed at the end of one hour; the bladder was contracted and empty, the chloroform having been expelled fifteen minutes prior to death. There was a very slight external congestion. The mucous membrane was diffusely reddened, especially in the base. Microscopic findings showed the usual picture of an early acute inflammation, consisting of congestion of the blood vessels with margination and extravasation of leukocytes, the polymorphonuclears predominating, and local edema. This was most marked at the serosa and receded in the muscular wall and mucosa. There was little involvement of the mucosa.

The findings present in the bladders of the various dogs into which the various substances were injected and allowed to remain for a period of time are those of inflammatory reaction. The degree of inflammation was somewhat variable, depending on the chemical, the duration of time it was retained in the bladder and the lapse of time before necropsy. In some, the inflammatory reaction was confined to simple congestion and slight edema. In others, margination and exudation of leukocytes occurred, with swollen epithelial cells; in others, desquamation; and in still others, with necrosis with or without loss of chromatin, with or without leukocytic infiltration.

The substance producing the most marked change in a short period of time was ether. The mildest seemed to be pure benzene. However, it is impossible to say which does produce the most severe pathologic condition without considering the question of later infection and resolution, necessitating further and more complete study. Certainly, ether should never be used.

## SUMMARY

Foreign bodies, such as gum, beeswax, paraffin and urethral pencils, are soluble in the urinary bladder, obviating the necessity of painful instrumentation or of operative procedures. The degree of safety with which these chemicals can be used in the urinary bladder is apparent. For paraffin, the best solvents are xylene, pure benzene, high test gasoline, and benzin; for gum, high test gasoline, benzin, xylene and gasoline; for beeswax, benzene, xylene, high test gasoline and ordinary gasoline; for urethral pencils, pure benzene, a commercial form of "automobile" benzene ("Ford benzol") and benzin. The presence of water or of urine neither aids nor interferes with the action of the solvent.

## CONCLUSIONS

With the establishment of definite time limits for dissolving a known quantity of paraffin, gum, beeswax or urethral pencils in vitro and in vivo, cases of this kind are amenable to office treatment and observation, thereby obviating the necessity of hospitalization. The observations of other workers have been that repeated instillations of the solvent were necessary, the solvent being retained for hours at a time. This, we feel, is unnecessary; however, no permanent damage would result from repeated injections.

813 Kresge Building.

---

## ABSTRACT OF DISCUSSION

DR. ALBERT E. GOLDSTEIN, Baltimore: I have not had much opportunity to observe foreign bodies in the bladder. There have been cases in which the wax bulb has broken off in dilating a ureteral stricture and dropped into the bladder, but they were small and easily passed. On one occasion, it was not passed as soon as it should have been, and the bulb became larger; but with the high frequency current I was able to break it up. I have had some experience with tar being used in the bladder, or, rather, in the urethra and passing into the bladder. Probably, if I had known of some of the methods used by Dr. Morris I would have been able to dissolve these masses. On one occasion, a large piece of tar on which urinary salts had accumulated was found in the bladder and removed with a rongeur. The question arises, Are the solvents we are using dangerous to the bladder? On one occasion, I injected some ether into the bladder of a dog and examined the bladder twenty-four hours later. The mucosa was highly engorged; there was an infiltration of leukocytes, and a fistula opened into the muscle wall. I have had no personal experience with the other solvents.

DR. WILLIAM E. STEVENS, San Francisco: My experience with foreign bodies in the bladder has been almost entirely limited to calculi, common black hairpins and dilator covers. Practically all of the calculi are taken care of with the lithotrite. I wish to sound a warning against the use of one type of Kohlmann dilator covers. These are made in two parts and are very apt to break where they are joined together, leaving a portion of the cover in the bladder or urethra. In the three cases in which this has occurred in my practice, the detached half of the rubber cover has fortunately been passed without much difficulty. The common black hairpin is a favorite instrument for young girls, in particular, to insert into the urethra and bladder. They are easily removed through the ordinary female endoscope or the operating cystoscope threaded over silver wire with a hook on its end. The latter is engaged in the loop of the hairpin, which is then readily withdrawn. If the prongs of the pin point upward, rotation is, of course, necessary before its withdrawal.

DR. HERMAN L. KRETSCHMER, Chicago: Although foreign bodies in the bladder of the type under consideration are not very frequent, anyone who has had occasion to treat these cases knows how difficult it is to grasp wax, chewing gum and such things with the ordinary instruments we have, such as the rongeur, the operating forceps and the lithotrite. In several cases it was impossible, after trying repeatedly, to grasp these foreign bodies with forceps, so that I was obliged to resort to an open operation (suprapubic cystotomy). Dr. Morris has tried to perfect a method of dissolving these foreign bodies of the various types and to get rid of them in this way. The problem, as he worked it out, depended on two fundamental things: first, the type of foreign body one is dealing with, and, second, the amount of damage, either transitory or permanent, the solvent one uses will do. I think we all agree that the use of these solvents will produce a chemical cystitis, but Dr. Morris has shown that these reactions are simply transitory, and ultimately disappear. I think they can be likened to the chemical pyelitis that is produced in pelvic lavage with silver nitrate. No doubt, a certain amount of chemical reaction is produced, but this heals in due course of time and the patient is relieved of the foreign body without an open operation. I think it might be well, in the use of some of the solvents, such as ether, in which

the changes are very severe, to let the dogs live longer to see whether permanent changes result.

DR. WILLIAM F. BRAASCH, Rochester, Minn.: In the removal of wax and other foreign bodies of a similar nature from the bladder, there is one difficulty that may have escaped the authors: a phosphatic deposit forms and surrounds these substances very rapidly. I have seen such foreign bodies covered by phosphatic deposits to such an extent that they had become true stones and no chemical solution could possibly dissolve them. This probably does not occur often, but only in cases of long standing. I wish to call attention to another type of foreign body found in the bladder; namely, such as are placed there by the patient, a condition that might well be termed "hysterical lithiasis." I have observed five patients, all women, who have deliberately inserted pieces of stone into the bladder. Naturally, a diagnosis of true stone was made by the attending physician, since the patients passed the stone with the urine and maintained that they had typical symptoms. Chemical examinations of the stones showed their inorganic nature at once.

DR. HOMER G. HAMER, Indianapolis: In one case of hysterical lithiasis we determined that plaster of Paris was the composition of recurrent calculi.

DR. OLIVER LYONS, Denver: Many years ago I had my first experience in removing chewing gum. I have had two experiences since, and learned something from the first case that may be of some advantage. I found that by injecting benzene into the bladder, as Lowenstein suggested, leaving it for a few minutes and allowing the patient to void the benzene, I would be likely to recover the chewing gum. That was true to a degree, but not completely. It set up a severe urethritis, and the patient dribbled some benzene onto the scrotum and thighs, which areas became infected and caused a large blister that gave us considerable trouble. Some years later I had occasion to use the same method, but this time I put in about 1 ounce of water, enough to cover the trigon and sensitive bladder neck, and then I floated the benzene in through a steel catheter. The chewing gum then floated on the benzene. The patient said that he had five cents' worth of chewing gum in the bladder, but it certainly looked larger through the cystoscope. I was not successful in getting it all out on the first injection, but it did not produce a blister, because I withdrew the benzene through the same catheter through which I introduced it, which let the benzene out first and the water last. There was a considerable bit of gum left, so I repeated the procedure the following day, and agitated the fluid with the same catheter. I found that it then dissolved the gum more readily. I had one experience such as Dr. Braasch mentions. About half of a little candle, such as are used on Christmas trees, was completely surrounded by a shell of phosphatic deposit which could not have been removed by this method.

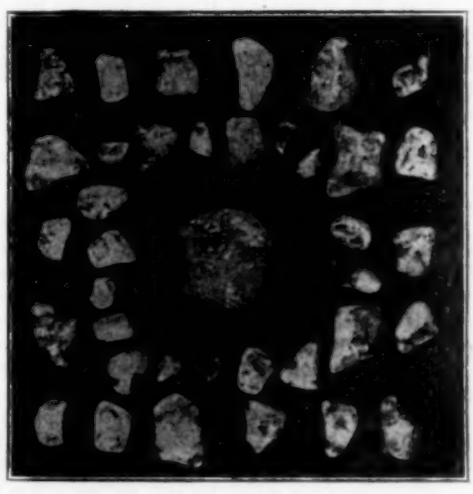
DR. HAROLD L. MORRIS, Detroit: In regard to ether, the dog was killed as soon as we observed her marked discomfort. A number of chemicals were used in vitro which we felt would not be applicable to the human urinary bladder. As we did not use ether in another dog, I do not know what the end-results would have been—probably unsatisfactory from the findings produced by ether. I was glad to hear Dr. Lyons speak of the cases he had had. As far as I know, no one else has experienced the marked discomfort and excoriations following the use of gasoline. With respect to the chemicals that we used, no reaction of this kind was noted. Unquestionably, Dr. Braasch was correct in his assumption that foreign bodies such as gum, paraffin, beeswax and urethral pencils might be the nuclei for phosphatic deposition and stone formation. That possibility we have not interested ourselves in, as our work had to do only with the dissolving of the foreign bodies mentioned. Judging from the symptoms produced by foreign bodies in the urinary bladder, I doubt whether patients would go without attention long enough for phosphatic formation to take place on such foreign bodies.

**Births at Sea.**—During the year 1921, 273 babies were born at sea in British ships, most of them on Atlantic liners.

# THE TIME ELEMENT IN GALLSTONE FORMATION

ANGUS L. CAMERON, M.D., PH.D.
Assistant Professor of Surgery, University of Minnesota Medical School
MINNEAPOLIS

Although it is well known that small concretions can be produced experimentally in the gallbladder of laboratory animals within a period of a few days—ten days according to Klivert [1]—and that small deposits of bile elements may occur around suture material within a few weeks after its insertion into the human gallbladder, yet conclusive proof concerning the rapidity with which well developed calculi may form in the human gallbladder is lacking. Rolleston [2] quotes Mignot [3] to the effect that it takes five or six months to form a stratified, well-formed biliary calculus. Moynihan [4] cites a case reported by Rokitzski [5] of a probably rapid formation of gallstones in a typhoid fever patient, aged 26, who was operated on at the end of the third week of her illness because of a suppurative cholecystitis. Fifty-



Thirty-eight human gallstones which are known to have formed within a period of eighty-six days.

eight apparently recently formed cholesterin calculi, showing a radiate arrangement, were removed. Cultures of the contents of the gallbladder and also of the centers of the concretions were positive for typhoid bacilli. There was no history suggestive of previous cholecystitis.

A number of such case reports of very probable rapid calculus formation during typhoid are to be found. In none of these reports, however, is the evidence conclusive that no concretions were present before the onset of the fever.

Recently, Mathias [6] stated that there is no accurate information concerning the time factor in gallstone formation, and then proceeded to prove that calculi which he found in the gallbladder of a typhoid patient formed during the course of the typhoid and within a

1. Klivert, D.: Ueber experimentelle Gallensteinbildung, Berl. klin. Wchnschr. **48**: 335-336 (Feb. 20) 1911.
2. Rolleston, H. D.: Diseases of the Liver, Gall Bladder and Bile Ducts, 1905, p. 719.
3. Mignot, R.: Recherches expérimentales et anatomiques sur les cholecystites, Paris, thesis, 1896.
4. Moynihan, B. G. A.: Gall Stones and Their Surgical Treatment, 1904, p. 46.
5. Rokitzski, W. M.: Ein Fall von Cholecystitis typhosa calculosa, Annalen der russichen Chirurgie, 1899, No. 1; abst. Centralbl. f. Chir. **26**: 616, 1899.
6. Mathias, E.: Zur Entstehungsdauer von Gallensteinen, München. med. Wchnschr. **68**: 582-583 (May 13) 1921.

period of sixty days. He examined some of these fifteen calculi, the largest of which measured 15 mm. in diameter, with the object in view of eliminating the possibility of previous stone formation. Since cultures of the centers of these stones were positive for typhoid bacilli, and they were not penetrable to other organisms, outside the gallbladder, the author concluded that they must have been formed during the course of the typhoid.

While these data are very suggestive of rapid stone formation, they certainly are not conclusive. It may be that these calculi were penetrable to organisms while in the gallbladder, or that during the course of the fever secondary deposits occurred around old concretions; in either case, Mathias' methods of proof would be fallacious.

Because of lack of definite information on this question, it would seem proper to report a case in which it was positively determined that numerous and well-developed calculi formed in a human gallbladder within a period of eighty-six days. It is very probable that this period of calculus formation was much shorter; but since it is the object of this report to limit it to positively determined facts and to avoid conjectures and even very plausible deductions, no attempt will be made to prove that stone formation occurred within a period of fifty-six days, which is likely, instead of eighty-six days.

### REPORT OF CASE

A man, aged 32, for three years prior to admission to the University Hospital had suffered from numerous attacks of right upper abdominal quadrant pain. His history was quite typical of recurring attacks of cholecystitis without jaundice; the last one occurred six days before he entered the hospital. Except for this trouble, the patient had always felt well.

A diagnosis of chronic cholecystitis was made. Since there had been neither fever nor leukocytosis during the eight days that he was under observation before operation, an acutely inflamed gallbladder was not suspected. The patient was operated on, Jan. 17, 1923. The gallbladder was about twice its normal size, acutely inflamed, and tense from distention with fluid. Its walls were thinner than normal; it was free from adhesions. Satisfactory palpation and inspection of the biliary ducts revealed no abnormalities. Because of its acute condition, it was thought best to drain the gallbladder at this time and to remove it at some time in the near future. It was therefore emptied completely by means of a large trocar, which was inserted through the fundus. At first, a colorless, mucoid material escaped, following which normal-looking hepatic duct bile flowed freely through the trocar. Evidently an obstruction of the cystic duct had obtained, but was overcome on evacuation of the gallbladder. This obstruction was probably due to a mucus plug.

With the complete collapse of the thin-walled and well-exposed gallbladder, it was positively determined both by inspection of its interior and by palpation of its walls that no calculi or cholesterin deposits were present. A No. 14 urethral catheter was introduced into the gallbladder and held securely by means of two purse-string sutures of plain catgut. About 150 to 200 c.c. of normal-looking bile drained daily through the catheter for two weeks, after which it was removed. Bile discharged through the fistulous tract for five days and then stopped. There were never any calculi discovered in the discharged bile.

A small amount of pus discharged from the fistulous tract during the time that the tube was in place, and for a few days after its removal.

The patient was discharged from the hospital twenty-four days after operation. At that time the wound was healed except for the old fistulous tract, which was nearly closed and which did close within one week. The patient was instructed to return at the end of three months for a cholecystectomy. On his return home, however, he suffered a great deal from dull, aching pains in the gallbladder region. The fistulous tract opened up and discharged pus but no bile. It healed over and then broke open periodically until the patient's readmission to the hospital, which was thirty-two days after his discharge, or fifty-six days after the cholecystostomy.

A cholecystectomy would have been performed within a few days had it not happened that the patient developed influenza on the third day of his second admission. Three weeks later he was scheduled for operation, which was seventy-nine days after the first operation; just before leaving his bed for the operating room, however, he was seized with a severe attack of pain in the gallbladder region, which was accompanied by chills and fever. The operation was postponed for one week.

Eighty-six days after the cholecystostomy, another operation was performed. When the gallbladder was exposed it was found to be far different in appearance from that discovered at the first operation. Instead of being distended, tense, thin-walled and acutely inflamed, it was shriveled up, opaque and thick-walled, and contained calculi that were evident on inspection. The biliary ducts were not involved. No culture was taken at either operation.

A cholecystectomy was performed. An uninterrupted and complete recovery followed.

The gallbladder contained thirty-eight irregularly shaped calculi, varying in size from 11 by 8 by 5 mm. to 5 by 3 by 2.5 mm.; one much larger, egg-shaped, calculus measured 17 by 15 by 12 mm. in its three diameters. The accompanying illustration is a photograph of these calculi; the largest one is seen in the center of the picture.

Dr. William W. Swanson, of the department of physiology, analyzed these calculi. The weight of the dried and powdered gallstones was 2.770 gm.; of the extractable material (cholesterol), 2.665 gm.; of the calcium, 0.015 gm., and of the pigments and unknown material, 0.090 gm. Thus, the calculi consisted for the most part of cholesterol with a small amount of calcium, bile pigments and a trace of bile salts.

Since rapid formation of numerous and fairly large calculi may occur, it is not unlikely that errors have been made in attributing the presence of gallstones found in the biliary tracts of patients at a second operation to failure to discover them at the previous operation. It may well be that they formed subsequent to the first operation, although the second operation was performed only a few weeks after the first.

---

**Relation of Complexes to Crime.**—Repressed complexes are, perhaps, not so much themselves the causes of crime, as part of the mental machinery through which the ulterior causes operate. Complexes similar to those discovered among delinquents and neurotics could, with sufficient exploration, be discovered among normals. Indeed, in spite of all the thorough work by the various psychanalytic schools, it still remains something of a mystery why complexes, apparently identical, should produce abnormal symptoms in one person and none in another. With delinquents, various factors seem to further this unfavorable development; defective family relationships obviously give the usual parental complexes a very unusual form; an overstrict or an overindulgent discipline—particularly when the two alternate within the same household—alike make the conflicts more acute; general instability, and the excessive strength of certain instincts—sex, anger, self-assertion and pleasurable disgust—intensify the lack of emotional balance; other instincts—timidity and unpleasant disgust—make for increased repression. Delinquents, too, manifest a disproportionate number, or at least a disproportionate strength, of certain more primitive complexes—particularly the auto-erotic, the self-regarding, and the more primitive phases of the parental; they often seem to have undergone an arrest or a fixation at these more infantile levels. Finally, innumerable events in the outer and inner life of the delinquent child—removal from home, quarreling at home, immorality at home, and their secret effects on his mind, pernicious companions or painful experiences outside the home—all serve to give a special trend to his unconscious emotional development.—Cyril Burt: *Brit. J. M. Psychol.* **3**:31, 1923.

# ROENTGEN-RAY INTOXICATION

## ROENTGENOTHERAPY IN MAN IN THE LIGHT OF EXPERIMENTS SHOWING SENSITIVITY OF INTESTINAL EPITHELIUM *

S. L. WARREN, M.D.
SAN FRANCISCO
AND
G. H. WHIPPLE, M.D.
ROCHESTER, N. Y.

An increasing amount of experimental data has been accumulating which indicates clearly that the intestinal epithelium is peculiarly sensitive to the hard roentgen rays that are used so much in modern therapy. In the light of this knowledge, we wish to review some of the scattered and incomplete observations in human cases, as we believe the evidence is convincing that the intestinal epithelium in man is likewise sensitive to the hard or short wave length roentgen rays. If this is an established fact, we must use care in the exhibition of roentgen rays when the small intestine is exposed to irradiation; for example, in the treatment of pelvic tumors. There can be little doubt that the small intestine can be injured by roentgen-ray therapy in human beings, and it is certain that any such injury is serious. We know that roentgen-ray skin "burns" or "ulcers" are very chronic, and we are able to state without reservation that the intestine can be so injured by the roentgen ray as to produce ulcers that are no less chronic than the familiar skin lesions.

Before reviewing some of the data concerned with human cases we consider it worth while to recall briefly some of the recent experimental work that bears on this whole question. The general constitutional reaction that may be caused by prolonged roentgen-ray exposures was studied by Hall and Whipple.[1] These writers demonstrated in this condition an increased nitrogen metabolism and at times a high blood nonprotein nitrogen level. Many of the earlier publications in this field are reviewed by Hall and Whipple, and we refer to their paper for a discussion of the numerous intoxication theories. They also found evidence that the intestinal epithelium was seriously injured by the roentgen rays.

Following a large does of irradiation given diffusely over the animal's body, one observes a remarkably constant clinical reaction which may be pictured here briefly. The first twenty-four hours may be perfectly normal. During the second twenty-four hours, there is some vomiting, loss of appetite, and at times a little diarrhea. On the third day, there is an increasing gastro-intestinal disturbance with frequent vomiting and much diarrhea, with some blood in the semifluid stools. On the fourth day, severe intoxication and often prostration occur, with continued vomiting and bloody or tarry feces. If a lethal dose is given, death usually takes place on the fourth day, but, on occasion, the fatal outcome may be postponed a day or two. In dogs, there is little difference in this picture whether a minimum lethal dose is given, or two or more lethal doses.

This uniform and characteristic reaction was studied in much detail by Warren and Whipple.[2] They were able to show that a standard roentgen-ray dose given over the thorax (abdomen shielded) was quite without clinical effect, but the same dose given over the abdomen (thorax shielded) was fatal in four days, with the clinical reaction described above. These experiments rule out at once, as concerned with the fatal intoxication, any effect produced by roentgen rays on bone marrow or the blood or lymph glands, because of the presence of these elements in the area of thorax exposure. Warren and Whipple gave ample evidence to show that the intestinal epithelium of the dog is remarkably sensitive to roentgen rays, and they described in detail the extensive destruction of the epithelium of the small intestine caused by the roentgen rays. The covering epithelium of the villi and the lining epithelium of the crypts may be almost completely destroyed. The stomach and colon epithelium is much more resistant, but can be destroyed by intensive irradiation. There is no evidence that the liver and pancreas are injured by these roentgen-ray exposures. The spleen and lymphatic apparatus in the dog are injured by these doses of roentgen rays, but not to the extent that might be anticipated, and not in any degree comparable to the extreme injury done the intestinal tract.

McQuarrie and Whipple[3] showed by functional and anatomic studies that the kidneys are not harmed by these exposures. Intensive irradiation given directly over the kidneys might cause a slight temporary decrease in kidney function, but no histologic changes were made out. They found no evidence of the so-called roentgen-ray nephritis.

Warren and Whipple pointed out the fact that the clinical intoxication and the progressive disintegration of the killed intestinal epithelium ran a parallel course, and they reasoned that the clinical intoxication was due to the roentgen-ray injury of the intestinal epithelium. It is evident that a sublethal injury of these same cells of the intestine might cause mild clinical symptoms without recognizable histologic cell injury in the intestinal mucosa. Everybody is familiar with functional disturbances of the mucosa of the small intestine with severe intoxication but without histologic evidence of cell injury (intestinal obstruction).

Recently it has been shown[4] that in animals there is an interesting and important type of roentgen-ray summation. A single large irradiation will kill a dog in four days, but the same total dosage divided into six equal parts and given over six consecutive days will likewise kill a similar normal animal within three or four days after the completion of the total irradiation. We may say that the evidences of clinical intoxication from a sublethal dose may last five or six days, and that any irradiation given within this period of intoxication will show evidence of summation. Conversely, our experiments indicate that doses given at intervals of from six to seven days or longer give no clinical evidence of summation in laboratory animals. This statement applies not only to small doses but also to maximal sublethal roentgen-ray dosage. We have never observed anything suggesting the so-called

* From the George Williams Hooper Foundation, University of California Medical School, and the School of Medicine and Dentistry, University of Rochester.

1. Hall, C. C., and Whipple, G. H.: Am. J. M. Sc. **157**: 453 (April) 1919.

2. Warren, S. L., and Whipple, G. H.: J. Exper. Med. **35**: 187 (Feb.) 1922.

3. McQuarrie, I., and Whipple, G. H.: J. Exper. Med. **35**: 225 (Feb.) 1922.

4. Warren, S. L., and Whipple, G. H.: J. Exper. Med., to be published.

"roentgen-ray anaphylaxis" or increase in intoxication resulting from a properly spaced second roentgen-ray exposure.

When the extensive destructive injury of the intestinal covering epithelium is pictured, one's first thought concerns the overwhelming invasion of intestinal bacteria that should follow. Contrary to expectation, our experiments gave no evidence for this overwhelming bacterial invasion of the tissues, the lymph and blood vessels. One is tempted to stress this observation to indicate that the covering intestinal epithelium is not the all important barrier that protects the tissues from invasion by intestinal bacteria. There may be a more important protective mechanism or a secondary defense formed that guards against bacterial invasion from the digestive tract.

These observations invite speculation as to the slight significance of trifling superficial injury of the intestinal epithelium as related to bacterial invasion of the blood stream.

Recently experiments [4] have shown that the roentgen rays that injure the intestinal epithelium travel in straight lines from the target through much intervening living tissue (such as skin, fat, muscle and intestine) to the cells that are sensitive to the rays. This cone of rays can be sharply limited by impervious lead screens, and this procedure demarcates sharply the area of injury deep in the abdomen. In other words, secondary irradiation, deflection of rays, etc., do not concern this type of cell injury. We may say that a similar conclusion as to deep lying tumor cells may be permissible, if not highly probable.

Observations on the common laboratory animals (dog, cat, rabbit, guinea-pig and rat) indicate that irradiation over the abdomen causes a common intestinal pathologic condition and clinical picture. The lethal dosage does not vary greatly in the animals. By contrast, we observe a high resistance to radiation on the part of birds, reptiles and frogs. The factors that may be concerned are discussed elsewhere.[4] All these data indicate by analogy the probability that the human intestinal mucosa is sensitive to the hard roentgen rays. There are scattered and incomplete clinical observations that strengthen this opinion, and we may now consider these reports briefly.

Rubel,[5] in 1902, reported a case with a large burn on the abdomen, with intestinal symptoms, alternating constipation and diarrhea, with death three and one-half months after an exposure of forty minutes to a Leed's coil, spark gap, 3 inches. Von Franque,[6] in 1918, reported intestinal injury with recovery after castration doses over the ovaries and uterus. Heck,[7] in 1920, operated on a cecal fistula occurring in a "burn" in the right lower quadrant two years after irradiation, and found a large section of the ileum necrotic. Death occurred eight days after the operation. He reported "ulcerative" changes and atrophy of the ileac mucosa. Among others mentioning intestinal symptoms that may be interpreted as due to direct injury following exposure of the human abdomen to irradiation are Wetterer,[8] Kroemer,[9] Franz,[10] Eymer,[11] Heck,[7] von Franque[12] and Nehrkorn.[13] Engel,[14] in 1907, reported some fatal cases of leukemia following irradiation, and recounted those described by Stone, Lenharts, Faboras, Schiefer, Türck, Fleisch, Senn and Walsh in 1897. Begouin's[15] patient received from twenty to thirty minutes of irradiation weekly, and died six days after the fourth exposure.

Rehfisch,[16] in 1923, recently reported a case of carcinoma of the cervix treated with hard irradiation through the abdomen and back, combined with radium emanation locally. The patient was given 2,200 millicurie hours of radium emanation across and in the cervix. Fifteen days later, she was given 600 milliampere minutes of roentgen irradiation through an "abdominal port 30 cm. in diameter." The next day, she received 700 milliamphere minutes through a "dorsal port." Three days later, 1,776 millicurie hours of emanation was applied to the cervix. The roentgen irradiation (with which we are chiefly concerned) was administered at a skin target distance of 50 cm. One mm. of copper and 1 mm. of aluminum were used to filter the radiation generated at an electromotive force of 200 kilovolts. Ten days after the last irradiation, a severe diarrhea developed, which was unchecked. The patient "died a toxemic death six weeks after treatment." Necropsy demonstrated large, sharply demarcated "ulcers" in the small intestine, cecum and rectum. Microscopically, these showed widespread destruction of the epithelium, with extension into the submucosa and infiltration of the surrounding tissues with lymphocytes and polymorphonuclear leukocytes. These lesions, which we have had the opportunity to examine, do not differ to any great extent from similar "chronic" lesions in dogs. Histologic sections indicated complete destruction of the cancer cells. Rehfisch reports other cases of diarrhea following irradiation, which were "successfully controlled with opium."

It must be kept in mind that most of the observations in human cases do not concern normal persons, but persons suffering from cancer, fibroids, leukemia, pneumonia, and other diseases. These disease conditions obviously complicate the picture and may modify the anticipated reaction. One person may thereby be rendered more susceptible to irradiation (leukemia?) and another more resistant to similar treatment.

These observations must not be interpreted as contraindication to the use of hard or short wave length roentgen rays produced by the modern roentgen-ray tube and high power machines. Radium can produce serious injury, but this does not contraindicate its use in proper cases, with a clear understanding of all its effects. Our experiments indicate that these hard roentgen rays can injure intestinal cells deep in the abdomen, and this arouses hopes that similar influence may be exerted on deep lying tumors; but careful judgment is required when considerable doses of roentgen rays are to be given so as to involve intestinal areas.

It seems probable that a diffuse exposure of the human abdomen to hard roentgen rays equivalent to from 240 to 400 milliampere minutes would cause a fatal intoxication. Smaller doses may cause some clinical reaction and even slight injury of the epithelium of the small intestine. Some symptoms of intoxication

5. Rubel, Maurice: Death Due to X-Ray? J. A. M. A. **39**: 1321 (Nov. 22) 1902.
6. Von Franque: Zentralbl. f. Gynäk. **42**: 1, 1918.
7. Heck: Strahlentherapie **11**: 796, 1920.
8. Wetterer: Arch. f. physiol. Med. u. med. Tech. **7**: 7, 1912-1913.
9. Kroemer: Monatschr. f. Geburtsh. u. Gynäk. **46**, 1917.
10. Franz: Berl. klin. Wchnschr. **54**: 27, 1917.
11. Eymer: Zentralbl. f. Gynäk. **42**: 885, 1918.
12. Von Franque: Strahlentherapie **10**: 1033, 1920.
13. Nehrkorn: Strahlentherapie **10**: 1920.
14. Engel: Deutsch. med. Wchnschr. **33**: 23, 1907.
15. Begouin: Semaine méd. **45**: 535, 1913.
16. Rehfisch: Personal communication to the authors.

may at times follow an erythema dose given over the abdomen.

### CONCLUSIONS

Evidence from animal experiments and scattered clinical observations is convincing that the human intestinal mucosa is peculiarly sensitive to the hard and short wave length roentgen rays. A similar condition certainly obtains in the common laboratory mammals.

It is probable that the intestinal epithelium is at least as sensitive as the skin epithelium, and it may be more sensitive when we consider its increased distance from the roentgen-ray target and the intervening body tissues.

Erythema doses or larger doses given over the abdomen or the intestinal areas may cause injury to this sensitive intestinal epithelium. Particular care should be taken when "cross fire" is used over areas that include intestinal coils, as the loops may be seriously injured.

Local roentgen-ray injury to intestinal coils may not give rise to severe clinical intoxication, but may cause ulcers that are no less chronic and dangerous than are the familiar roentgen-ray skin "burns."

It is very desirable that all cases in which erythema or larger doses are given over the abdomen be very carefully studied and reported so that our knowledge as to the danger limits may be comprehensive. Until such time, we must use the data obtained from controlled animal experiments. Such experiments indicate that the intestinal epithelium is quite sensitive to hard irradiation. These facts should receive careful consideration by the radiologist who contemplates radiotheraphy of abdominal areas (for example, pelvic tumors).

---

## UROLOGIC PHASE OF PERNICIOUS ANEMIA

IRA R. SISK, M.D.
MADISON, WIS.

Recently I have observed an elderly man whose symptoms of difficult urination and retention of urine were due to the spinal cord changes in early pernicious anemia rather than to obstruction from the prostate gland. As pernicious anemia is rarely discussed from an urologic angle, it seems pertinent to stress this phase of my case and to add the cystoscopic findings to the extremely scanty literature on the subject.

### REPORT OF CASE

*History.*—G. S., a man, aged 57, presented himself to his local physician, complaining of frequent and difficult urination. A hurried examination was made, the prostate assumed to be the source of the trouble, and the patient was referred for operation, April 12, 1923. He gave a history of difficult urination with onset two years previously. Before that time, however, he had noticed some difficulty after holding the urine for a long period of time. For two years he had voided every hour and one-half day and night, and frequently was forced to stand from one-half to one hour in order to get the stream started. At times he had been unable to urinate for periods as long as twelve hours, but he had never resorted to catheterization. There was no pain, but a slight burning sensation persisted at the end of urination. At intervals during the last two years, he had passed blood with the stools. This was especially noticeable when he strained in an attempt to empty the bladder. He recalled having bled a little on one or two occasions during January and February of this year. Following these periods, he felt weak. Six weeks previously, he had bled freely for twelve days, and he had noticed that his mouth was sore for two or three days at that time. For three months the left hand and the forefinger and middle finger of the right hand had felt numb. Tingling and numbness on the left side of the body for some period of time had also been noted, and had at times interfered with sleep. The history of changes in the nervous system was elicited only after close questioning, owing to the fact that the patient considered them of no importance and had his mind fixed on the urinary symptoms.

*Examination.*—The appearance of the patient was rather suggestive of pernicious anemia, but might have been confused with that of patients with advanced renal insufficiency, such as is observed in prostatic hypertrophy. The heart was normal in size; a systolic murmur was heard at the apex. The teeth were carious, with rather marked pyorrhea alveolaris. The systolic blood pressure was 130, the diastolic, 52. Examination of the urine showed: specific gravity, 1.018; reaction, acid; albumin, 1 (on a scale of 1 to 4), and no sugar. Microscopic examination revealed pus, 4.

Examination of the blood revealed: hemoglobin, 40 per cent.; erythrocytes, 2.06; leukocytes, 6,850; polymorphonuclear neutrophils, 64 per cent.; lymphocytes, 33 per cent.; eosinophils, 1.5, and transitionals, 0.5 per cent. There were a few normoblasts, megaloblasts, microblasts, and very marked anisocytosis and poikilocytosis.

Roentgenograms of the kidneys, ureters and bladder were negative. Proctoscopic examination was negative except for internal hemorrhoids. Gastric analysis showed a complete absence of free hydrochloric acid. Blood urea was 37 mg. per hundred cubic centimers of blood. The phenolsulphonephthalein return was 40 per cent. in two hours and fifteen minutes.

On cystoscopic examination, the capacity of the bladder was noted to be about normal; there was 360 c.c. of residual urine, which was very turbid in appearance; the bladder mucosa showed chronic cystitis, especially in the right and left bases. Both meatuses were normally located, appeared small and contracted, and expelled normal spurts of clear urine. Trabeculation of the bladder was not noted. The prostate was normal in size and appearance; the internal bladder sphincter was somewhat relaxed, and there was no obstruction in the urethra or bladder neck. Both ureters were catheterized, pointed No. 5 catheters being used because of the small, firm and resistant meatuses. An unusual amount of pressure was necessary to force the catheters through the meatuses. Both catheterized specimens showed pus: pus 2 from the right side, and pus 1 from the left.

Cystoscopic diagnosis was made of early "cord bladder," bilateral renal infection, and cystitis. The clinical diagnosis of pernicious anemia was made by Dr. Harold Marsh.

Dr. Bleckwen made a neurologic examination, which disclosed hyperreflexia, especially of the lower extremities, ankle clonus of the left foot, but no paradoxical reflexes. There was an area of hyperesthesia posteriorly over both buttocks corresponding to the fourth and fifth sacral segments. There were other areas of hyperesthesia and anesthesia on the arms and legs. No evidence of cranial nerve involvement could be obtained. The bladder was distended. The impression was one of areas of sclerosis of the spinal cord secondary to pernicious anemia.

*Treatment.*—The usual treatment for pernicious anemia, consisting of blood transfusion and so forth, was recommended with daily bladder lavage, but the patient refused transfusion and care in the hospital. He was, therefore, referred to his local physician, who gave him medicinal treatment for the anemia and lavaged his bladder once a day. About June 15, I learned from his local physician that considerable improvement had been made and that the patient was again able to empty the bladder normally.

*Summary.*—In a case of marked difficulty and frequency of urination, the prostate was normal in size, the urinary symptoms being due to the spinal cord changes in pernicious anemia. After a few weeks of medical treatment for pernicious anemia and daily bladder lavage, normal urinary function was regained. The history of the changes outside the urinary tract was obtained with difficulty, and not until after a diag-

nosis of "spinal cord bladder" had been made, since the patient did not consider these ailments of sufficient importance to discuss. The points of interest in the cystoscopic examination were: (1), small, firm and contracted ureteral meatuses; (2) relaxation of the internal sphincter of the bladder, and (3) absence of trabeculation.

### COMMENT

The literature on "spinal cord bladder" is extremely voluminous, but references to "cord bladder" resulting from pernicious anemia are extremely rare. In my review of the literature, I have found the cystoscopic findings in this condition described only by Kretschmer,[1] who had observed four cases. A comparison of some of the findings in my case with the observations made by Kretschmer brings out several points of interest. All four of Kretschmer's patients were in or past the fifth decade of life; there were two men and two women. In two of his patients (one man and one woman) the chief complaint referable to the urinary tract was, as in my case, difficult urination. In two cases it was noted that the bladders were trabeculated, and in the other two the condition of the bladder wall was obscured by severe cystitis. No mention is made of contraction and rigidity of the ureteral orifices, although Koll[2] is quoted as remarking that such a condition exists in tabetic bladders.

There is considerable difference in the estimates of the frequency with which the spinal cord is involved in pernicious anemia, but the recent writings of neurologists indicate that the percentage is very high. Woltmann[3] states that 80.6 per cent. of a series of 150 patients on whom complete neurologic examinations were made showed evidence of definite changes in the spinal cord. Hamilton and Nixon[4] make a similar estimate of from 75 to 80 per cent. In a review of a series of 264 cases of pernicious anemia, Riley[5] found that approximately 80 per cent. "presented signs and symptoms indicating an involvement of the central nervous system."

Regarding the relationship of the onset of the nervous symptoms and the onset of the disease, Woltmann found nothing constant. The nervous symptoms may precede those of anemia or, on the other hand, a patient may die of pernicious anemia without having had any involvement of the nervous system.

It is difficult to estimate the frequency with which the bladder is greatly involved in cases of pernicious anemia, as statements regarding this phase of the disease are very rarely exact. Riley, in referring to the genito-urinary system, simply states that "in some cases examined during the terminal stages of the disease, there was incontinence of urine." Woltmann in a review of 121 cases of pernicious anemia with involvement of the nervous system, found partial incontinence in 8 per cent., complete incontinence in 0.8 per cent., partial retention in 4 per cent., and complete retention in 0.8 per cent. Of forty-one patients discussed by Hamilton and Nixon, six complained of urinary incontinence on admission to the hospital.

That marked improvement in the vesical symptoms in cases of pernicious anemia may occur concurrently with improvement in the anemia was noted by Cunningham[6] in 1907. He observed a patient with difficult and frequent urination and a large amount of residual urine who had pernicious anemia and also a hypertrophied prostate. The prostatic obstruction was relieved by a Bottini operation, and the patient was studied during several attacks of intermittent urinary retention, which occurred with the relapses of the anemia.

Freund,[7] in 1907, observed a somewhat similar case in which retention of urine occurred with the relapse of the anemia.

### CONCLUSIONS

1. Marked urinary symptoms may develop as a result of spinal cord changes in pernicious anemia.
2. In some cases the bladder symptoms may develop early in the course of the disease and before a diagnosis of pernicious anemia has been made.
3. In elderly men, the urinary symptoms of pernicious anemia may be confused with those of hypertrophy of the prostate gland, unless accurate means of diagnosis are employed.
4. In cases of spinal cord bladder in pernicious anemia, as in spinal cord bladder from other causes, the close cooperation of the neurologist, internist and urologist is of great importance.

1. Kretschmer, H. L.: Spinal Cord Bladders Occurring in Pernicious Anemia, J. Urol. **6**: 195 (Sept.) 1921.
2. Koll, quoted by Kretschmer (Footnote 1).
3. Woltmann, H. W.: The Nervous Symptoms in Pernicious Anemia, an Analysis of One Hundred and Fifty Cases, Am. J. M. Sc. **157**: 400-409 (March) 1919.
4. Hamilton, A. S., and Nixon, C. E.: Sensory Changes in the Subacute Combined Degeneration of Pernicious Anemia, Arch. Neurol. & Psychiat. **6**: 1 (July) 1921.
5. Riley, W. H.: A Clinical Study of 264 Cases of Pernicious Anemia with Special Reference to the Involvement of the Central Nervous System, Bull. Battle Creek Sanitarium and Hosp. Clinic **18**: 195-231, 1923.
6. Cunningham, J. H.: Recurrent Intermittent Retention of Urine Occurring with the Remissions in a Case of Pernicious Anemia: The Final Result of a Bottini Operation for Associated Prostatic Hypertrophy, Ann. Surg. **45**: 284-296, 1907.
7. Freund, H. A.: Hemolysis in Pernicious Anemia, Augmented by Urinary Retention, J. A. M. A. **48**: 1476-1478 (May 4) 1907.

---

## BACTERIAL FACTORS IN PYORRHEA ALVEOLARIS

### I. MICROBIC CHANGES IN SALIVA *

IVAN C. HALL, PH.D.
BERKELEY, CALIF.

The etiology of pyorrhea alveolaris is still unsettled. Howe,[1] in 1921, said, "Notwithstanding all that has been written and said upon pyorrhea alveolaris, the exact cause or causes are unknown, and our conception of the processes involved is vague and indefinite." Again, in 1922, Swank[2] said, "Its etiology has been and still is shrouded in mystery. . . . We can point to no one cause and say it is *the* cause." These statements are still true. In general, there are two groups of theories regarding pyorrhea alveolaris: (1) those which consider the local factors as primary causes, with the general conditions as secondary symptoms, and (2) those which consider the local aspects as secondary manifestations of general conditions.

The early controversial history between these two points of view has been reviewed recently by Bunting,[3] and need not be repeated in detail here. The rationale of the localists, as clearly outlined by Riggs,[4] denies "that peridental disease arises from constitutional causes," but "begins as a local inflammation of the gingival tissues caused by the irritation of calculi and other accretions on the teeth contiguous to or beneath

* This research was sustained in part by a grant from the California State Dental Association.
* From the Department of Bacteriology and Experimental Pathology, University of California. California Stomatological Research Group.

1. Howe: J. Allied Dental Soc. **9**: 584, 1921.
2. Swank: Dental Cosmos **64**: 937, 1922.
3. Bunting: Dental Cosmos **64**: 731, 1922.
4. Riggs, cited by Bunting (Footnote 3).

the free margin of the gum." One of the best arguments for this view is that if the deposits are completely and persistently removed, the disease is often arrested and permanently controlled.

On the other hand, no doubt, there are cases in which constitutional factors predispose to pyorrhea, as long claimed by Magitot, Hopewell-Smith, Talbot, Howe and others.[5]

It is not my purpose here to review in detail the various theories, polymicrobic and monomicrobic, bacterial and protozoan, that have been offered to explain pyorrhea alveolaris. I wish merely to point out certain facts relating to the development of fetor, and to changes in reactions of saliva which have a bearing on the deposit of dental calculus.

One of the most generally accepted theories regarding the deposit of calculus on the teeth has been that calcium is precipitated from saliva on the escape of carbon dioxid, which holds it in solution at the moment of secretion.[6] For many other theories, both ancient and modern, one may consult the review by Prinz[7] in 1921. Prinz himself considered that escape of carbon dioxid is "merely an incident in the precipitation of tartar," and also pointed out that "fresh saliva pumped directly from the gland rarely shows an ammonia reaction with Nessler's reagent, while mixed saliva allowed to drip from the mouth almost invariably does." Prinz emphasized bacterial putrefaction as a factor, and said, "The greater the degree of protein decomposition, the stronger the reaction."

Normal saliva, freshly collected by expectoration under mental stimulus only, is opalescent, owing to the presence in it of numerous squamous epithelial cells, which, as shown by Miller,[8] Pickerill[9] and others, are always loaded with bacteria. "Even a few hours after birth, the mouth of an infant contains a few bacteria, and, as soon as it nurses, the flora immediately increases."[10] The eruption of the teeth, of course, affords many new lodging places for baceria and the débris on which they feed. Saliva may be assumed to be sterile as secreted, but it immediately becomes contaminated with micro-organisms, and there is no evidence that it is germicidal.

Saliva has long been regarded as slightly alkaline in reaction.[11] Lothrop and Gies[12] found it generally alkaline to litmus and acid to phenolphthalein. The following reports of the initial reactions are on record: Bloomfield and Huck,[13] $p_H$ 6.0 to 7.5; Starr,[14] $p_H$ 6.4 to 7.0; La Farga,[15] $p_H$ 6.8 to 7.0, and Prinz,[7] $p_H$ 6.8 to 7.4.

Within a few minutes, the reaction becomes frankly alkaline, as mentioned by Taylor,[16] Graham[17] and La Farga,[15] and confirmed by my observation. During this time, the squamous epithelial cells and food particles, if any, usually flocculate and begin to settle. I have frequently observed a change from $p_H$ 6.6 to 7.6 in my own saliva during fifteen minutes. Normal fresh saliva is odorless.

I have studied some of the changes that occur in saliva through the growth in it of the normal salivary flora. Samples of saliva were secured from my mouth or from that of my assistant, a healthy woman, aged about 22. Neither has pyorrhea, but both have several filled cavities; neither suffers from halitosis. Our mouth conditions are considerably better than the average. Saliva was collected by expectoration under mental stimulus only, unless otherwise mentioned.

Reaction changes were determined colorimetrically by means of the color chart of Clark and Lubs, appropriate dyes being used.

If saliva is incubated at 37 C., within a few hours (from twelve to twenty-four) it loses its initial mucoid consistency, becomes more nearly clear, with a white sediment, develops a slightly sour odor and generally an acid reaction, equivalent in some cases, to $p_H$ 6.6. At this time the squamous epithelial cells can still be recognized, but they are likely to be swollen and indistinct. Further incubation fails to change the macroscopic appearance of the saliva essentially, but it again becomes alkaline and develops the halituous fetor of advanced pyorrhea. The terminal reaction (about $p_H$ 8.6) is reached in from forty-eight to seventy-two hours. At this time, the squamous epithelial cells can no longer be recognized as such. In explanation of these results, we may assume that the initial change in reaction toward alkalinity is due to loss of carbon dioxid. The development of acidity on incubation probably represents the fermentation of carbohydrates residual from food particles or of mucin, a glycoprotein. Carbohydrates derived from food may or may not be necessary. One notes in passing that while Kirk[6] thought normal saliva contained a carbohydrate, Prinz[7] was unable to demonstrate even a trace in the saliva of a diabetic patient with 7 per cent. sugar in the urine. The secondary alkaline change is due to bacterial putrefaction, which occurs only when fermentable carbohydrates have become exhausted, as abundantly shown by Kendall[18] and others. The proteins involved may be, in part, food particles, but are in the main the squamous epithelial cells.

It was interesting to observe the effect of certain procedures on the events mentioned above. Mercuric chlorid (slightly acid in reaction) inhibited all changes, as might be expected; terminal subcultures were sterile. Boiling saliva for five minutes previous to incubation completely inhibited the development of acid and of fetor, but only slightly delayed the development of alkalinity; terminal subcultures showed only sporulating hay bacilli. Refrigeration at about 6 C. for four days curiously has a similar effect; such specimens became fetid on subsequent incubation, showing that the organisms responsible for the fetor were only temporarily restrained. In all specimens treated with mercuric chlorid, boiled or refrigerated, the saliva remained opalescent.

The specimens incubated with excess fermentable carbohydrate (saccharose and glucose) became relatively clear in eighteen hours, with an acidity of $p_H$ 4.6, which increased during three more days' incubation only to $p_H$ 4.4. They were sour after the first day, and did not become fetid at any time. Streptococci predominated greatly, as shown by daily stains and in terminal subcultures on agar. Identical results were secured with saliva secreted while chewing a soda cracker without admixture of other carbohydrates. These experiments, excepting the last, are summarized in Table 1.

5. References are given by Bunting (Footnote 3).
6. Kirk: American Textbook of Operative Dentistry, Ed. 4, 1911.
7. Prinz: Dental Cosmos **63**: 231, 369, 503, 619, 1921.
8. Miller: Mikro-organismen der Mundhöhle, Ed. 2, Leipzig, 1892.
9. Pickerill: The Prevention of Dental Caries and Oral Sepsis, Ed. 2, Philadelphia, 1914.
10. Brophy: Dental Cosmos **63**: 323, 1921.
11. Howell: A Textbook of Physiology, Philadelphia, 1906.
12. Lothrop and Gies: J. Allied Dental Soc. **5**: 262, 1910.
13. Bloomfield and Huck: Bull. Johns Hopkins Hosp., 1920, pp. 31-118.
14. Starr: J. Biol. Chem. **54**: 43, 1922.
15. La Farga: Comptes rend. Soc. de biol. **86**: 412, 1922.
16. Taylor: Digestion and Metabolism, Philadelphia, 1912.
17. Graham: Dental Cosmos **61**: 409, 1919.
18. Kendall: Bacteriology—General, Pathological and Intestinal, New York, 1916.

While in the normal saliva the development of fetor corresponds with the secondary alkaline change, in both boiled and refrigerated specimens alkalinity develops without fetor; these changes, though normally associated, may be separated, and fetor may be ascribed perhaps to species not represented in boiled or refrigerated specimens. The presence of fermentable carbohydrates also interferes with the development of fetor.

It was interesting to compare the effect of cracker (carbohydrate) in saliva, during incubation. Ten cubic centimeters of saliva was first collected from a clean mouth under mental stimulus, requiring six minutes (Sample A). Two grams of soda crackers was then chewed during the collection of 10 c.c. of saliva, requiring three minutes (Sample B). After the mouth had

TABLE 1.—*Reaction Changes in Saliva* *

| | 18 Hrs. | 48 Hrs. | 72 Hrs. | 96 Hrs. |
|---|---|---|---|---|
| Sample A, refrigerated | *p*H 7.6 Odorless | 7.8 Odorless | 8.0 Odorless | 8.2† Odorless |
| Sample B, boiled 5 min. | 7.8 Odorless | 7.8 Odorless | 8.4 Odorless | 8.4 Odorless |
| Sample C, mercuric chlorid, 1:1,000 | 6.6 Odorless | 6.6 Odorless | 6.6 Odorless | 6.6 Odorless |
| Sample D, 10 per cent. saccharose. | 4.6 Slightly sour | 4.6 Slightly sour | 4.5 Slightly sour | 4.4 Slightly sour |
| Sample E, 10 per cent. glucose.. | 4.6 Slightly sour | 4.6 Slightly sour | 4.5 Slightly sour | 4.4 Slightly sour |
| Sample F, control | 6.6 Slightly sour | 8.4 Fetid | 8.6 Fetid | 8.6 Fetid |

* Sixty cubic centimeters of saliva was collected under mental stimulus only in a sterile graduate. It was divided into six equal portions in sterile test tubes. All but Sample A were incubated at 37 C.

† Became sour in twenty-four hours, and fetid in forty-eight hours on subsequent incubation.

been thoroughly washed, 2 gm. of cold lean roast beef was chewed during the collection of 10 c.c. of saliva, requiring two minutes (Sample C). After determination of the reactions, all were incubated at 37 C. with the results shown in Table 2.

One notes that, whereas, normal saliva becomes fetid and alkaline on incubation, that containing cracker became acid and sour, while that containing meat became putrid (and fetid?) and changed reaction only slightly during seventy-two hours. The failure of material reaction change in the latter may be attributed to the buffer action of protein. The usual macroscopic and microscopic changes were observed in the saliva containing no food. Both of those containing food developed considerable gas. In the cracker at twenty-four hours, the starch cells and squamous epithelium

TABLE 2.—*Reaction Changes in Saliva Incubated with Food*

| | Initial | 24 Hrs. | 48 Hrs. | 72 Hrs. |
|---|---|---|---|---|
| Sample A, no food | *p*H 6.6 Odorless | 8.4 Fetid | 8.6 Fetid | 8.6 Fetid |
| Sample B, cracker | *p*H 7.0 Odorless | 4.6 Sour | 4.6 Sour | 4.6 Sour |
| Sample C, meat | *p*H 6.4 Odorless | 6.6 Putrid | 6.8 Putrid | 6.8 Putrid (and Fetid?) |

could still be made out; in the meat, only the muscle fibers could be recognized. There were no marked differences in bacterial flora in stained slides, streptococci, gram-negative and gram-positive diplococci and rods being noted in all. Both starch cells and muscle fibers were still recognizable at the end of the experiment; the squamous epithelial cells could be found only in Sample B after the first twenty-four hours.

I tried the effect of saliva whose secretion was stimulated by chewing paraffin. Ten cubic centimeters was first collected as usual, under mental stimulus only, requiring five minutes (Sample A). Ten cubic centimeters was then collected by chewing paraffin, requiring three minutes (Sample B). Both were turbid, and

TABLE 3.—*Reaction Changes in Activated Saliva*

| | Initial | 24 Hrs. | 48 Hrs. | 72 Hrs. |
|---|---|---|---|---|
| Sample A | *p*H 6.8 Odorless | 6.6 Sour | 8.2 Fetid | 8.4 Fetid |
| Sample B | *p*H 8.2 Odorless | 7.2 Sour | 9.0 Fetid | 9.2 Fetid |

microscopic examination of cover slip preparations and of gram-stained slides showed the usual squamous epithelial cells and rich microbic flora in both. The only demonstrable difference was in the reaction; the activated sample was more alkaline, not only at once, but at each stage of incubation (37 C.), as shown in Table 3. It will be observed that the reaction changes and the development of odor were similar in direction.

It then occurred to me to see whether saliva freed from cells by centrifugalization putrefies and develops the characteristic fetor of untreated saliva. I found that it becomes alkaline more rapidly even than the latter, but does not become fetid.

Fifty cubic centimeters of saliva was collected as usual, centrifugalized and divided into two equal parts. Sample A contained the cells; Sample B contained the supernatant fluid, which was water clear. Microscopic examination showed bacteria in both fractions, but the larger forms were absent from Sample B. The results of incubation (37 C.) are shown in Table 4.

Practically identical results were secured in a comparison of saliva filtered through fine, soft paper with

TABLE 4.—*Reaction Changes in Centrifugalized Saliva*

| | Initial | 16 Hrs. | 24 Hrs. | 52 Hrs. |
|---|---|---|---|---|
| Sample A, residue | *p*H 6.8 | 7.0 Very fetid; hydrogen sulphid odor also | 7.6 Very fetid; hydrogen sulphid odor | 8.2 Very fetid |
| Sample B (supernatant fluid) | *p*H 6.8 | 8.2 Odorless | 8.2 Odorless | 8.2 Odorless |

saliva from which the cells had been centrifugalized as above.

These instructive experiments showed that the squamous epithelial cells retard the reaction changes, presumably by their buffer action; but the terminal reactions were the same. They also indicate that these cells or micro-organisms, large enough to be thrown out by the centrifuge, or removed by filter paper, and perhaps both, are necessary for the development of the characteristic fetor.

It was suggested that there should be a difference in samples of saliva collected fractionally. Several experiments in which five 10 c.c. lots were collected one after another in separate sterile test tubes have, however, shown no essential differences in time required for collection by a given person, in initial reaction, in reaction changes during incubation, or in odor. When samples were collected from unwashed mouths following a meal, there was appreciable reduction in food particles visible microscopically during the periods of collection

(from thirty to fifty minutes); there was only a slight reduction in squamous epithelium and bacterial flora.

COMMENT

It is well known that the calcium salts are held in solution by acids and precipitated by alkalis; and whether acid or alkali production occurs in the mouth depends on the kind of débris available. A carbohydrate residue favors fermentation with acid formation; a protein residue favors putrefaction with alkali formation. Theoretically, calculus should be deposited only under the latter condition. One should scarcely go so far as to say that pyorrhea can occur only in mouths habitually alkaline; the extent to which stagnation of proteins, including desquamated epithelium, occurs under the gingival margin may be the determining factor. The constancy of these findings should be tested on saliva samples from a variety of mouth conditions.

Microbial changes in the mouth depend primarily on the kind of pabulum, as well as on the kinds of organisms present. But the former probably determines the latter. It will be important to investigate what functions are performed by particular species in this connection. Already it may be said that (1) halituous fetor may, but does not necessarily, accompany salivary putrefaction; (2) it is due to organisms destroyed by boiling, while putrefaction may be due in part to organisms not destroyed by boiling, and (3) it never occurs while fermentative changes are in progress. Numerous experiments have shown the difficulty of cultivating the fetor-producing organisms in artificial mediums, although a characteristic fetid odor sometimes occurs in primary cultures in brain medium from cases of advanced pyorrhea, but never in subcultures. The fetor can be reproduced in sterilized saliva by inoculation from fresh saliva but not by any of the easily cultivatable bacteria of the mouth. Whether microorganisms other than Noguchi's [19] *Treponema mucosum* may be responsible, and what particular micro-organisms, if any, may be made in pure culture to reproduce artificial calculus similar to that demonstrated by Burchard,[20] Kirk,[20] and Bunting and Rickert [20] in raw saliva and by Prinz [7] in artificial saliva, remains for the future.

19. Noguchi: J. Exper. Med. **16**: 194, 1912.
20. Quoted by Prinz (Footnote 7).

**Child Labor in Maryland.**—The U. S. Department of Labor, through the Children's Bureau, has issued the second of a series of reports on rural child labor. Four Maryland counties are included in the study, Anne Arundel (near Baltimore), Wicomico, Somerset, and Worcester on the eastern shore. Eight hundred and eight white and negro children in Anne Arundel County who had done farm work in the year preceding the study and 838 children on the eastern shore were interviewed. The chief findings were: Over 90 per cent. of the children in the schools in the truck farming areas of the eastern shore had worked on the truck farms within the year preceding the inquiry. A large proportion of these children in Anne Arundel County work on the farms. In the eastern shore localities, the workers are chiefly farmers' children. In the Anne Arundel area there are also large numbers of hired workers, some of them white children who migrate from Baltimore for seasonal farm work. Most children under 10 years of age work a short day at simple kinds of work for a few days or weeks during the year. Most white girls do little more work than the young children, but some of the older negro girls and many white and negro boys 12 years of age or over work nine or ten hours a day. The majority of these children lose from four to six weeks at the end of the school term in order to go out to the truck farms.

# THE AGE OF GRADUATION OF MEDICAL STUDENTS

THEODORE HOUGH
Dean, University of Virginia Department of Medicine
CHARLOTTESVILLE, VA.

The annual report of the Council on Medical Education and Hospitals to the House of Delegates [1] gives on page 1930 a valuable statistical table of the age of graduation from American medical colleges for the session 1921-1922.

This table gives the age distribution of 2,403 out of the total of 2,529 graduates of this year, and shows that the average or mean age of graduation is 26.8 years. The Council's report also calls attention to the significant fact that all but one of the fifteen colleges having the lowest age average are Class A institutions, while four of the fifteen medical schools having the highest age averages are rated in Class B or Class C; from which is drawn the conclusion that the average age does not depend so much on the amount of premedical education as on the acceptance of older students who have previously been engaged in other occupations.

Another important cause of high age of graduation is the acceptance of students in advanced standing from other medical schools in which they have failed to progress with their classes; some schools take more of these students than other schools. Even when these students do not transfer to other schools but repeat the year in the school in which they have failed, their medical course is correspondingly lengthened by one or two years. A certain number of students also take five or more years to the course because of interruptions through illness or equivalent cause; and a small number prolong the course to five or six years in order to spend part of their time as student assistants, in research, or in profitable simultaneous study in other departments of the university.

These are the real causes why many men do not graduate as soon as theoretically possible after completing the high school course; the influence of higher standards of premedical and medical education is really negligible. This statement is supported by the fact, brought out in the same report of the Council (p. 1929), that the average age in 1916 was 26.5 years, as compared with 26.8 years in 1922; for it will be recalled that the class of 1916 entered in 1912, two years before the requirement of one year of premedical college work went into effect in all Class A schools.

In order to enforce the truth of this view, it seems worth while to group the medical colleges in the Council's report serially according to the average age of graduation of the class of 1922. In this table those schools which in 1918 required more than two years of premedical college work are indicated by italics, the number of premedical years required being indicated by the accompanying numeral. The reader will note the strikingly even distribution of these schools throughout the series. Especially noteworthy is the position of Western Reserve and Cornell, and even Johns Hopkins, in this list.

It seems more logical to subtract from the average age of graduation one year in the case of those schools which in 1922 required the fifth or intern year for the diploma. Most graduates of the better four-year

1. J. A. M. A. **80**: 1926-1937 (June 30) 1923.

schools actually take the intern year, and whether the diploma is awarded at the end of the fourth or fifth year of the student's course is immaterial. Consequently, in Table 1, the average ages for Illinois, Loyola, Minnesota, Marquette, Northwestern, Rush, California and Stanford are given as one year less than in the table of the Council on Medical Education and Hospitals.

Furthermore, to make the different schools comparable and also to make statistics of 1922 comparable with those of 1916 and other years, it seems preferable to take as the significant age, not the age of graduation, but the age at which the student completes the standard four year curriculum. The accompanying chart shows that when the graduates of schools requiring the intern year in 1922 are transferred to the preceding age group and the totals of each age group are recalculated on this basis, the curve of distribution is materially changed.

There is, of course, one error left after this recalculation, namely, the students of these so-called five year schools are still counted as graduates of the class of 1922; whereas, for the purposes of this discussion, they rightly belong in the class of 1921. Those students of the class of 1923 in these five year schools who in 1922 had completed the regular four year curriculum and were then entering on their intern year would give the correct figures for these schools, if they are to be accurately compared with other schools. It is doubtful, however, whether this would make any great change in the totals for the entire country.

In the remaining portions of this paper I have therefore used the recalculated totals as more nearly representing the actual facts bearing on this discussion of the age of graduation, than those shown in the Council's report (explained in legend to chart).

TABLE 1.—*American Medical Colleges Seriated According to the Average Age of Graduation of the Class of 1922**

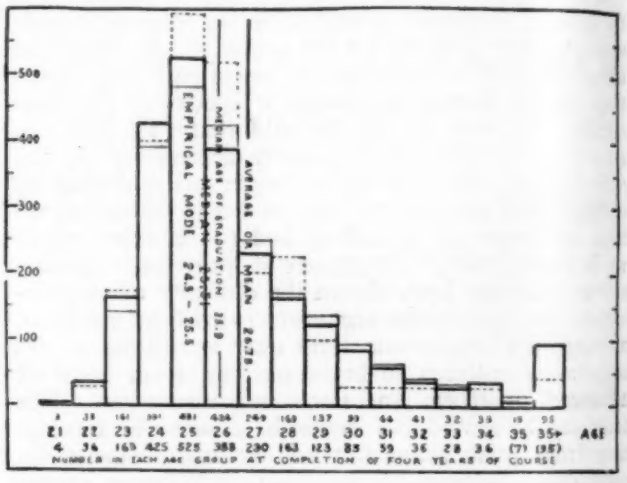
| | | | | | |
|---|---|---|---|---|---|
| 24.5 | Bellevue | 26.1 | Ohio State (H) | | California |
| 24.8 | Columbia | | Buffalo | | Vanderbilt |
| 25.2 | Jefferson | | Indiana | 27.4 | Oklahoma |
| 25.3 | Texas | | Iowa | 27.8 | Colorado |
| 25.5 | Georgia | 26.2 | Med. Coll. of Va. | 27.9 | Boston Univ. |
| | Tufts | 26.3 | Virginia | 28 | Hahnemann (Chicago) |
| | Creighton | | Yale | | McHarry |
| | Long Island | 26.4 | Minnesota | 28.1 | Baylor |
| | West Tennessee | | Tulane | 28.3 | Woman's Med. of Pa. |
| 25.6 | Pennsylvania | | Marquette | | Detroit |
| | Syracuse | 26.5 | Cincinnati | 28.7 | *Stanford* (3) |
| | Emory | 26.6 | Washington | | Eclectic |
| | Georgetown | | Michigan (R) | | Howard |
| 25.7 | *Western Reserve* (3) | | *Johns Hopkins* (4) | 29.1 | Med. Evangelists |
| | Albany | 26.7 | Hahnemann (Phila.) | 29.2 | N. Y. Homeo. |
| | Nebraska | | Ohio State (R) | 29.4 | Kansas |
| 25.8 | Illinois | 26.8 | *Harvard* (2 or 4) | 29.5 | Michigan (H) |
| | Loyola | | Northwestern | 29.7 | Temple |
| | Pittsburgh | | St. Louis | 30.3 | Tennessee |
| 25.9 | *Cornell* (3) | | Louisville | 30.8 | Oregon |
| 26 | Vermont | 26.9 | Med. Coll. of S.C. | 34.4 | Kansas City P. and S. |
| | Maryland | 27 | Rush | | |
| | Geo. Washington | | | | |

* Colleges which required the fifth (or intern year) for graduation are classed as having an average age of graduation one year less than given in the Council's table, to make them comparable with other colleges requiring only four years for graduation. Colleges which in 1918 required more than two premedical college years for admission are given in italics, with the number of premedical years required.

## FALLACIOUS CONCLUSIONS USUALLY DRAWN FROM THE AVERAGE AGE OF GRADUATION

The publication of the statistical table referred to[2] is especially welcome because it gives me the facts on which to base a protest against an all but universal fallacy in current thought about the age of graduation from the standard four year medical course.

This fallacy consists in the failure of those using previously published statistics to make the fundamental distinction, familiar to statisticians, between the *average* or *mean*, the *median*, and the *mode* of curves of distribution. It would be difficult to find a more striking example of the false conclusions to which one may be led by the failure to make the distinction especially between the mode and the mean than the almost universally accepted opinion as to the age of graduation from medical schools. The fact that the average age of graduation is 26.8 years means to most people that the majority of students of medicine do not enter on their year of intern service until they are almost 27 years of age, do not begin active practice until they are 28 or 29 years of age, and consequently are not self-supporting until well above 30 years of age. The current literature of this subject simply teems with this wholly erroneous conclusion.


500
400
300
200
100
EMPIRICAL MODE 24.5 - 25.5
MEDIAN AGE OF GRADUATION 25.9
AVERAGE OR MEAN 26.78
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 35+ AGE
4 34 169 425 525 388 230 163 123 85 59 36 28 36 (71) (95)
NUMBER IN EACH AGE GROUP AT COMPLETION OF FOUR YEARS OF COURSE

*Heavy lines*, frequency polygon showing the age distribution of graduates of American medical colleges, session 1921-1922, at time of completion of the standard four year medical course. Calculated from statistical table in THE JOURNAL, June 30, 1923, p. 1930, by subtracting one year from the age given in that table for graduates of colleges requiring the fifth or intern year. Abscissas, ages; ordinates, number of graduates. Total graduates represented, 2,403, out of 2,529 for the session. The number in each age group is given in the line below the ages. *Light continuous line*, same at time of graduation, i. e., some after a five year course and the rest after a four year course. The number in each age group is given in the line above the ages. These are the totals given in the table as published by the Council. Median of this curve—25.9—shown in the light vertical line. *Broken lines*, frequency polygon of all graduates of the University of Virginia (a four year school), 1918-1924, inclusive, who presented two or more years of premedical college work for admission. The distribution curve of these 169 individuals is made comparable with that of the entire country for 1922 by multiplying the number in each age group by 14.22 (2,403 ÷ 169).

*Constants of the Three Distribution Polygons*

| | Recalculated (Heavy Lines) | Graduates of 1922 (Light Lines) | Virginia (Broken Lines) |
|---|---|---|---|
| Average or mean | 26.78 | 26.8 | 26.05 |
| Median | 25.51 | 25.9 | 25.65 |
| Empiric mode | 24.5-25.5 | 24.5-25.5 | 24.5-25.5 |
| Theoretical mode | 23 | 24.1 | 24.85 |

The accompanying chart gives in plotted form the facts taken from the Council's report using the recalculated totals for each age group. It shows that, so far from the majority of medical students being almost 27 years of age at graduation,

1.6-per cent. graduated before 22.5 years ( 1.6)[3]
8.4 per cent. graduated before 23.5 years ( 7.4)
26.1 per cent. graduated before 24.5 years (23.3)
48.0 per cent. graduated before 25.5 years (43.7)
64.1 per cent. graduated before 26.5 years (61.4)

The determination of the median of the frequency polygon given in the chart actually shows that one half

2. J. A. M. A. **80**: 1930 (June 30) 1923.

3. To show the effect of our recalculation of the totals for each age group, the corresponding percentages that would be obtained from the Council's totals are given in parentheses.

of the graduates are less than 25.5 years of age at the time of graduation; i. e., at least one year and three months younger than the mean age of all graduates.

### THE MEAN OR AVERAGE, THE MEDIAN AND THE MODE

Full information as to the meaning of the terms mean or average, median, and mode, when applied to a curve of distribution of a seriated group of observations, and also the method of calculating these constants for such curves, are given clearly by Davenport.[4] For our purpose the following definitions and explanations will suffice.

The *average* or *mean* in this case would, of course, be the quotient of the total number of graduates into the sum of the products of each age by the number of individuals in that age group. This is the only constant usually employed in current thought on this question. For the graduates of 1922, it is 26.78 years. It is instructive to note how little the mean age is changed by our recalculation, while the other constants of the curve of distribution are markedly changed.

The *median* is that age above and below which one half of the individuals or variants occur. In the case in point, it is 25.51 years. Avoiding mathematical language, this means that one half of the graduates of 1922 were less than 25.51 years of age, and one half were more than this age.

The *mode* is the class in which the largest number of individuals fall. Here we must distinguish between the empiric and the theoretical mode. The age range of each class of the series is, of course, chosen arbitrarily; in the case in point, each graduate is classed according to age at the nearest birthday, so that the age of those classed, for example, as 24 years will range roughly from 23.5 to 24.5 years; the Council's table does not, however, inform us how the 425 individuals in this 24 year group are distributed between the twelve monthly periods or the fifty-two weekly periods, included in the group range; we may be sure that fewer graduates are 23 years, 7 months of age than 24 years, 5 months; but the published record does not show the exact form of the curve of distribution between the limiting ages of the group.

On the data given we have, therefore, the "empiric mode" or the actually observed mode group of ages at graduation, which is 25 years, or, more exactly, 24.5-25.5 years. Approximately 22.4 per cent. of all graduates are in this mode group. In this connection the percentages of the following groups are significant:

1.50 per cent. graduate between 21.5 and 22.5 years ( 1.4)
6.78 per cent. graduate between 22.5 and 23.5 years ( 5.8)
17.69 per cent. graduate between 23.5 and 24.5 years (16.3)
22.36 per cent. graduate between 24.5 and 25.5 years (20.0)
16.24 per cent. graduate between 25.5 and 26.5 years (17.6)
64.+ per cent. graduate between 21.5 and 26 5 year of age, i. e., below the mean or average age of all graduates.

Suppose, now, the 2,403 individuals had been arranged by ages in a series of monthly or weekly groups, which of these groups would be the largest? In other words, where would the mode fall? The data at hand do not answer this question, and we must be content with the calculation of the probable or "theoretical" mode of the curve of distribution. Using Pearson's formula for the approximation of this constant of the curve—that the theoretical mode is on the opposite side of the median from the mean and twice as far from the median as the mean—the theoretical mode is found to be 22.47 years. The same constant for the actual graduates of 1922 (Council's totals) is 24.1 years.

This means simply that in all probability more will be graduated at 23 years than at any other decimal age fraction. The "theoretical mode," however, is not a specially significant quantity for the purposes of this discussion; the empiric mode, the median, and the percentages of different age groups given heretofore are the important points.[5]

### THE MODE AND NOT THE MEAN AGE OF GRADUATION IS THE SIGNIFICANT FEATURE

A moment's thought will show that virtually all factors influencing the curve of distribution of the ages of graduation tend to postpone graduation beyond the theoretically probable minimum age. Few students enter college before their seventeenth year, and it is possibly not desirable for nine tenths of them to enter college as early as this. Six years are then required for the degree in medicine (excluding the intern year). Exceptional intellectual ability and exceptional educational advantages are the sole factors tending to reduce the age of graduation in medicine below 23 years. The frequency polygon in the chart shows this clearly.

On the other hand, numerous factors, in no way connected with the premedical or the medical curriculum, tend to increase the age of graduation, namely:

1. Interruption of the continuity of premedical and medical study for financial reasons. This is certainly one of the most important and possibly the most important factor.

2. Spending the three or four years needed for a cultural academic degree before beginning the study of medicine. My experience is that, in general, this is time well spent, and the practice should be encouraged. It is robbing a human being of his birthright to encourage him to go into the study and *especially the practice* of medicine without the cultural background of a complete college course. In the case of some students this time may, of course, be wasted; in the case of others it is financially impossible to give the needed time; but the medical profession and society in general will be the gainers by increasing the number of physicians capable, because of the cultural background of a complete college course, of taking a broad view of the duties, the responsibilities and the privileges of their profession.

3. Illness or equivalent cause. This is to some extent reducible by more efficient supervision of the hygienic and sanitary conditions of student life.

4. Late choice of profession. A considerable proportion of medical students chose the profession of medicine after one year in college; some not until, or even after, the time of graduation; and then another year in college is frequently required to complete the premedical requirement. This always will be the case. Colleges may find some way to expedite the choice of life work.

5. The fact that the medical course proves too heavy for many men, who have to take five or even six years for its mastery, but who ultimately graduate and become reliable and useful members of the profession. Often one year is added to the medical course because

4. Davenport, C. B.: Statistical Methods, Ed. 2, New York, John Wiley & Sons, 1904, Chapter II.

5. It is, however, desirable, in case the Council on Medical Education and Hospitals publishes similar studies of the graduates of other years, that at least the 24, 25, 26 and 27 year groups be seriated by months instead of by years alone, so that we may have the actual facts instead of the calculated probable or "theoretical" mode.

the relatively easy-going habits of intellectual application acquired in the standard college course of thirty semester-hours a session has not prepared for the standard session work of forty or more hours in the medical school. Here, again, these students will be better physicians for the extra year or years added to their period of study and the corresponding delay in entering on their life work. The work of the medical school is no harder than the really successful work of life, and it is a function of the medical course to establish this standard of work in its students as a part of their preparation for life. A great teacher, William T. Sedgwick, often used to say (or quote, I am not sure which), "The world consists of two classes of people—the overemployed and the unemployed. There is no third class."

6. Prolonging of the course by a few students, as pointed out heretofore, to serve as student assistants, to engage in research, or to take additional university courses in related lines. The medical profession and society is in the end benefited by the accession of this more thoroughly trained group of men to the ranks of the profession.

These are the real factors that tend to increase the average age of graduation, and the Council's figures show that, out of a total of 2,403 students, these factors are operative to a greater or less degree in the case of 1,250 (those above the empiric mode of 24.5-25.5 years); i. e., in the case of 52 per cent. of students.

It would be an interesting study to determine in a large group the relative contribution of each of the foregoing six factors to this result; for some of these factors call for remedial measures while others do not. Those calling for such remedial measures are 1, 3, 4 and (to a lesser degree) 5, and the possible remedies are obvious: for example, the establishment, through scholarships and loan funds on a far larger scale than exists anywhere at present, of the means of relieving financial stress in the case of needy students of proved merit; effective organization of hygienic supervision throughout the entire period of elementary, secondary, premedical and medical education; the more effective organization of academic training so as to assist college students to acquire effective habits of study and to "find themselves" earlier; and, finally, in the medical school, the judicious use of competent tutors, especially in the fundamental sciences, for students who have difficulty with the medical course. I have no sympathy with the policy of ruthless elimination by mechanical rule of every student who fails to pass in "one major and one minor subject, no extenuating circumstances allowed." This country needs safe, reliable, even though not brilliant, practitioners of medicine and public health too badly to justify this policy on the part of any medical school supported from public funds; and the same thing is true of most privately endowed institutions, since a large part of their endowment and perhaps a larger part of their capitalized income was paid for this purpose. Nor does any medical school seem justified in ruthlessly "passing this buck" to its neighbors.

Measures of this kind (and not panicky, revolutionary tinkering with the curriculum) are what is needed to reduce the mean age of graduation, so far as it is desirable to reduce this constant of the curve of distribution.

After all, however, it should be clear that the significant constant of the curve of age distribution is not the mean but the mode, i. e., the age at which the largest number of men graduate. It will be conducive to clearer thinking on the part of both the medical profession and the public if, in the future, the age mode receives the same emphasis in the statistics of the Council on Medical Education and others studying the subject as the mean or average age has received in the past; and, above all, if the chief fact emphasized is that, despite all factors tending to increase the age of graduation, 48 per cent. graduate before they are 25.5, and 64 per cent.—almost two thirds—graduate before they are 26.5 years of age. This paper is a plea to give these pertinent facts in future statistical studies and to present these facts so that the public will not be misled in its thought on this subject.

## SUMMARY

1. The use of the average or mean instead of the mode of the distribution curve of the age of graduation from medical schools has led to entirely erroneous impressions, not only as to the age at which the majority of medical students enter on the active practice of their profession, but also as to the effect of modern standards of medical education on this age.

2. It is not the rule for medical students to graduate at 26.8 years of age; notwithstanding the many factors that interrupt or prolong the period of study, 26 per cent. graduate before the minimum probable age (24.5 years) and 64 per cent. graduate before 26.5 years. It is also shown that half the graduates are less than 25.5 years, and that 22.3 per cent. graduate between 24.5 and 25.5, the empiric mode age.

3. Present standards of medical education cannot justly be held responsible for late graduation from medical schools. The true factors are enumerated in this paper. Some of these are remediable; others are not. The postponement of graduation in a considerable proportion of cases is desirable and results in a more thorough training for the practice of medicine and the elevation of standards of professional life; it also contributes to the efficient training of that great army of safe, though not "leading," practitioners of medicine and public health who constitute the first line of defense against disease.

## AGE DISTRIBUTION OF GRADUATES IN MEDICINE FROM THE UNIVERSITY OF VIRGINIA, 1918-1924, INCLUSIVE

Previous to the appearance of the foregoing 1922 statistics for the whole country, I had made an attempt to get an idea of the empiric and theoretical modes, the median, and the mean for those graduates of my own school whose ages I had in convenient reference form in my office and who entered with more than one year of premedical college preparation. This includes most of the graduates from 1918 to 1924 inclusive, and all graduates after 1920. Although the total number of this group (169) is too small to give an even curve of age distribution, I have thought it worth while to give the results in the form explained in the legend to the chart, since the University of Virginia—although long suffering with its own weaker students—admits virtually no students in advanced standing unless a strong record is presented from the school previously attended. The group includes a fair number of men who spent five years in our school, and three or four who spent six. The other factors delaying the age of graduation enumerated in the body of this paper are probably as strongly operative as elsewhere, and the percentage of those with three or more years of premedical college work probably runs higher with us than in most schools requiring only two premedical college years.

The Virginia curve (in the chart) follows the curve for the entire country quite closely for the first four years, as would be expected, since these years include the minimum possible

and probable years of graduation, and it would seem that Virginia gets its fair share of these exceptional students; we then get proportionately more students of the next two age-years—the region of the mode (24.5-26.5); and a smaller proportion of those of more advanced years. The subnormal size of higher age classes is explained by the care in admission with advanced standing, but chiefly by the small number of men admitted who have passed their twenty-second birthday.

Noteworthy is the fact that 38 per cent. of our graduates had baccalaureate degrees, and 53 per cent. had three or more years of premedical college work; nevertheless, we have fewer of the greater age groups and proportionately more of the ages at which students would be expected to graduate. This is additional evidence of the slight effect of more extensive premedical preparation in raising the average age of graduation to its present figure.

It is to be hoped that other medical schools will collate and publish similar statistics.

---

# USE OF MICROPHONIC STETHOSCOPE IN DEMONSTRATION OF FETAL HEART TONES

A PRELIMINARY REPORT *

FREDERICK HOWARD FALLS, MS., M.D.
AND
ALAN C. ROCKWOOD, B.E., M.S.
IOWA CITY

The hearing and counting of the fetal heart beat is the most important criterion of the condition of the baby in utero. This has been accomplished by various means as the science of obstetrics has developed. The tones were first heard by Mayor [1] in 1818 with the unaided ear. With the development of the stethoscope, various forms of these instruments have been used. The ordinary forms of the stethoscope have the disadvantage that they are not easily used by an operator when scrubbed up for a delivery. This disadvantage has been overcome by the head stethoscope, which can be used by the operator without manipulation by the hands. The disadvantage of this instrument, however, is that it is tiresome to the head and ears when worn for some time, and it interferes somewhat with the hearing of the operator for other sounds in the room.

Furthermore, considerable practice is necessary for students and nurses to acquire the ability to hear and count the fetal heart tones. In certain patients even the experienced obstetrician may find difficulty in locating the heart tones, especially in obese subjects or in patients having an unusually large amount of amniotic fluid. It would therefore seem desirable if some mechanism could be devised to magnify the tones so that they could be easily heard by an inexperienced person with ordinarily good hearing. This would be still more valuable if it could be accomplished without the necessity of wearing a stethoscope.

With the advent of the loud speaker in connection with the amplification of radiotelephony, it occurred to one of us (F. H. F.), that the principles involved might well be employed in the amplification of the sound of the fetal heart tones, so that it would be possible to hear these tones throughout the delivery room even by an inexperienced person, or in patients in whom the fetal heart tones were difficult to hear. The obvious advantage of this would be that, during labor, accurate information might be obtained and transmitted to the obstetrician by even an inexperienced nurse or intern. During operations, the operator could hear at all times the fetal heart beat and note its rate, rhythm and quality, and would therefore have constantly before him, throughout the delivery, the best and almost the only available data concerning the condition of the baby.

It was with the hope of being able to accomplish this that the investigation was undertaken. In these experiments, as in the use of the ordinary stethoscope, the reproduction of the rate and volume of the fetal heart tones was aimed at rather than fine details of the tones themselves.

Preliminary investigations in the use of the telephone transmitter were made in October and November, 1922. In these tests, an ordinary commercial telephone transmitter was used in connection with a de Forest amplifier designed for telephone work, and a Magnavox loud speaker. Similar tests were also made with a supersensitive carbon-ball type of microphone, such as is used for detective work or in radio broadcasting from a large room. It was at once evident that the basic problem to be met here was the elimination of extraneous noises from the transmitter and its circuits, since footsteps or other jarring noises in the room drowned out the heart tones. Trouble was also experienced with sound waves from the loud-speaking device acting on the transmitter a second time and setting up howling in the system. It was difficult to exclude these sounds from the transmitter. Experiments were also begun on the use of an ordinary Baldwin telephone receiver as a magnetic transmitter, but this was not followed up because of the small response given to the adult heart tones.

These experiments were abandoned on the reports of the success of Abbott [2] with the microphonic transmitter of the carbon type in which all sounds of frequencies above that of the heart were damped out. This transmitter had been used successfully in amplifying the adult heart tones for audiences up to several hundred. Through the courtesy of Professor Abbott, one of these transmitters was secured and experiments were again resumed.[3]

Experiments in using the transmitter with the Western Electric type 7-A speech amplifier were unsuccessful because the energy level of the transmitter was too high for the amplifier. Experiments were then conducted with General Electric U V 201-A and C 301-A amplifying vacuum tubes in makeshift amplifiers, using several types of commercial audiofrequency amplifying transformers.

It was found that a two stage amplifier of this type gave sufficient response to adult heart beats for detection in a head set or Western Electric loud speaker, but was unable to register the fetal heart tones. The maternal pulse could be distinctly counted with the transmitter over the abdomen. A three stage amplifier revealed both heart beats, and, by experimentation in the selection of the position, it was possible to detect the fetal pulse beats intermittently, but so faintly that it would have been impossible to count them to determine the rate of the fetal heart. A five stage amplifier gave a distinct response in considerable volume to the fetal

* From the Department of Obstetrics and Gynecology, State University of Iowa College of Medicine.

1. Mayor, quoted in Bibliotheque universelle de Genève, November, 1818.

2. Description of Special Transmitter by Prof. R. B. Abbott in Physical Review, February, 1923.

3. In the Correspondence Department of THE JOURNAL (August 25, p. 679) we were credited with having used this apparatus for some time. Owing to an unfortunate delay in receiving the transmitter, it is only recently that we have been able to complete our experiments.

pulse, and it could be readily counted several feet from the loud speaker. As a result of the tube noises, inherent in this type of tube, maximum amplification could not be employed.

At present, therefore, we are able to report that we have been able to hear and count the fetal heart tones in sufficient volume for clinical use by means of this apparatus. Equipment has been ordered for a permanent installation in our delivery room. This equipment has been designed to eliminate much of the tube noises, and to give a greater volume than previously. In addition, noncritical vacuum tubes will be employed, which eliminate all current controls.

---

## OPHTHALMIA MYIASIS EXTERNA, DUE TO LARVAE OF OESTRUS OVIS*

H. H. STARK, M.D.
EL PASO, TEXAS

During the day's work of ophthalmology, one becomes so accustomed to common diseases of the eye that diagnosis of any of the usual cases is a simple procedure and it is only the rare cases that are difficult. Therefore, anything adding to our knowledge of rare cases should be of value, especially when it widens the geographic field in which they are found.

I would hesitate to report a single case did it not seem to have an exclusive place in American literature, evidenced by the fact that I have found none like it so far recorded.

### REPORT OF CASE

F. D., a girl, aged 16, reported to her local physician, L. H. Dunham of Las Cruces, N. M., in July, 1921, that for two days she had had a burning itching of the right eye and lid, with something passing in front of her sight, and that several small white objects, which she thought were worms, had been taken from her eye at home.

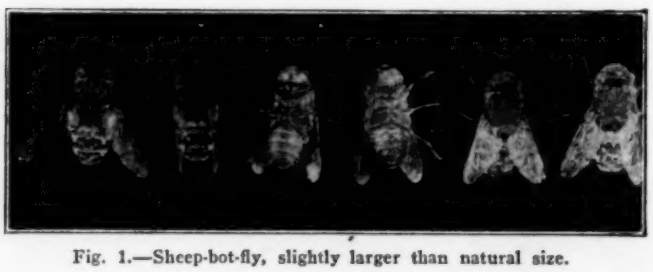


Fig. 1.—Sheep-bot-fly, slightly larger than natural size.

Inspection of the eye showed a marked degree of conjunctivitis, and excessive lacrimation, with a number of small white organisms, swimming with rapid movement across the conjunctiva. When an attempt was made to remove these organisms, they would apparently bury themselves in the conjunctiva, making their removal very difficult. However, they were successfully removed by the physician, and the use of liquid petrolatum was ordered.

Examination on the following morning showed that the congestion had increased markedly; the patient complained of disturbance of sight, having headache, vertigo and edema of both lids. At this time she was brought to me, and Dr. Dunham presented me with a bottle of physiologic sodium chlorid solution containing four small white objects which he had removed from the eye, and which under the microscope proved to be larvae of some character.

In going over the history, I found that about two days previous to the attack, she had felt something hit her right eye, which was thought to have been a gnat. The blow was very slight and caused her no immediate discomfort.

Examination now showed marked edema of both lids, a peculiar fiery red conjunctiva, and excessive lacrimation, with but slight interference or disturbance of vision; but no larvae could be found. A mild antiseptic was ordered, and she returned home. During that night she slept very badly, and about 1 a. m. had a convulsion lasting nearly twenty minutes. This subsided with a hypodermic injection of morphin, but she went without sleep practically the entire night. The temperature and pulse were normal. The next night she slept fairly well and there was some improvement in the eye condition, which continued until, on the seventh day following the attack, the eye was practically normal, and has so remained.

The convulsion was possibly due to nervousness, rather than any result of the eye condition.

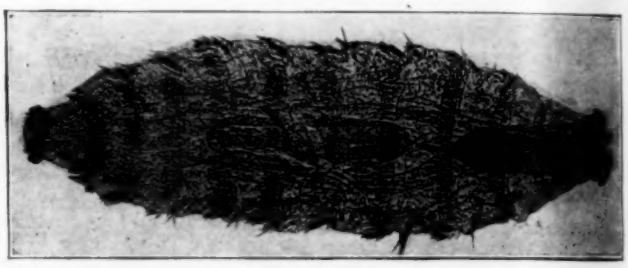


Fig. 2.—Larva of sheep-bot-fly, enlarged about 80 diameters.

### THE SHEEP-BOT

The larvae were sent to the Bureau of Entomology, United States Department of Agriculture, for classification, and were of sufficient interest to attract the attention of Dr. L. O. Howard. There was some doubt as to the classification, and they were forwarded to Mr. F. C. Bishop, Entomologist, Insects Affecting Health of Animals, Dallas, Texas, who classified them as the first stage larvae of *Oestrus ovis,* or larvae of the common sheep-bot.

The history of the life cycle of the larva is that it is deposited by the fly, while in motion, in the nostrils of the sheep. It passes into the nasal sinuses, where it slowly changes into the second stage of life, remaining almost dormant through the winter months. In the spring, development starts, the size increases, and it passes into the third stage, when it becomes quite active, causing symptoms of staggering, loss of weight, and, frequently, the death of the host. On reaching maturity it is expelled and reproduces the fly, which is more prevalent during the warm months and whose movements take place only during the warm part of the day.

A female fly may contain several hundred larvae, but when these larvae are deposited voluntarily, there may be only from eight to a dozen. The flies are widely distributed over the country used for sheep raising, and are causing a severe loss to sheep owners.

The subject is now under special investigation by the Department of Agriculture.

Hoping to be able to carry on some animal experiments, through the courtesy of Mr. O. G. Babcock, Sonora, Texas (special field agent), I received twenty flies; but, owing to the distance from which they were sent, most of them were dead, and the living ones had no larvae.

The most comprehensive article on this subject is by I. A. Portchansky, a Russian, a translated abstract of which was furnished me by the department. He describes the larva as resembling the horse-bot in size and shape. It reaches to 1 mm. in length, has an

* Read before the Section on Ophthalmology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

elongated, oval body, broad in front and gradually attenuated in the rear. The mouth hooks are black, brown or generally dark colored, and well developed, resemble horns, and serve for attachment to the mucous membrane, which attachment takes place quickly and efficiently. He quotes several cases from the literature, most of which may be found in the American Encyclopedia of Ophthalmology.

Myiasis of the conjunctiva due to this larva seems to be uncommon in any country, and takes place more often where there are large numbers of human beings in comparison with the number of sheep. The reports indicate that it occurs oftener in the warm countries of northern Africa and southern Europe. It is doubtful whether the larvae cause any permanent damage to the eye. In a rather wide inquiry among sheep-raisers, I have found no history indicating trouble which might have been caused by the larvae.

---

## FILARIA LOA

### REPORT OF CASE OF REMOVAL FROM THE SUBCONJUNCTIVAL TISSUES *

J. W. KIMBERLIN, M.D.
KANSAS CITY, MO.

The literature, especially tropical, is quite full of articles on various kinds of *Filaria*. The two varieties that are better known and classified are *Filaria bancrofti* (also called *F. nocturna*) and *Filaria loa* (also called *F. oculi, Loa loa, F. diurna* and other terms). Others are *Filaria inermis, Filaria oculi-humani,* Elliott (*F. equina*), and *Filaria palpebralis. F. inermis* is not well known or described, but at times invades the subconjunctival tissues. It is more than 100 mm. long. *Filaria oculi-hummani* is described by Elliott,[1] who states that the term is indefinite, meaning that the filariae occur in man within the globe, in the aqueous and vitreous humor, and beneath the retina. They are from 60 to 80 mm. long. They also are found within the globe of the horse and the ox, and in camels and turkeys. They are quite common in India, Burmah and Ceylon, infrequent in China, and quite rare in southeastern Europe and the United States.

#### CLASSIFICATION AND DESCRIPTION

*Filaria bancrofti* is the most common of all, and produces symptoms and findings quite different from *Filiari loa*. It is endemic and quite common in the Pacific Islands, Fiji, Samoa and the Philippine Islands (in some of these islands 80 per cent. of the inhabitants show evidence of harboring the parasite). It is endemic in the United States only in Charleston, S. C.[2] The intermediate host is the mosquito. The microfilariae fill the blood stream, but are found in the peripheral vessels only at night.

*Filaria loa*, the one we are here most interested in, is endemic only in the west coast of Africa from Sierra Leone to Benguela, and never spreads away from its African habitat. If a host is found in another part of the world he has always hailed from West Africa. The intermediate host is the diurnal blood-sucking mangrove fly (*Chrysops dimidiati*), and the development of the worm has been traced by Leiper in the fly's salivary glands. The fly usually attacks the legs, and the bite is painless. The best protection is the wearing of long, heavy stockings or high leather boots. It takes several years for the filaria to develop after entering the human host. The adult worm is from 30 to 40 mm. long, though some have been reported from 60 to 70 mm. long. The female is readily recognized by the uterus filled with ova, and is longer than the male. The human body may be infested with one or more of the worms. The microfilariae fill the blood stream, but are found in the peripheral vessels in quantities only in the daytime, just opposite to *Filaria bancrofti*. The microfilariae of *F. bancrofti* and *F. loa* have been given about the same description, but in the textbook of Castellani and Chalmers a differentiation is given in the size of the two, in the character of the curves, and in the periodicity when habits of sleeping and waking are reversed.

Swellings on different parts of the body are usually the first signs of the infection. They are called Calabar swellings, and may come on any part of the body, but are most common on the arms and legs. They appear quite suddenly, and disappear gradually. They are about half the size of an egg, are often hot to the touch, are painless when confined to the soft parts, and never suppurate. They were formerly supposed to be due to the emission of embryos by the female, but Ward [3] has shown that they are more probably caused by the periodic discharge of the waste products of metabolism. The worm can often be felt moving about in some parts of the body; it is quite painful while in the tighter tissues about the ear, and produces an irritation while traveling under the conjunctiva. This pain and irritation stop suddenly when the worm dives into the deeper tissues. The worms appear to travel through established paths, and their speed has been estimated at an inch in two minutes. Heat seems to attract them to the surface tissues, their visits to the surface being at widely indefinite periods. They often are felt traveling from one eye to the other across the bridge of the nose. One surgeon reports that the worms infesting the negro are much more sluggish than those with a European host.

The first symptoms are usually experienced two years or more after exposure to the infection. The filariae, once developed in the human body, are long lived. They have been reported as living up to fifteen years in the body.

Low and O'Driscoll [4] state that eosinophilia, varying from 12 to 20 per cent. in persons from endemic areas, is said to be a very constant symptom.

Various general modes of treatment have been used with no positive results. According to Elliott, the treatment should be:

> The removal of the parasite when a favorable opportunity offers. The principal difficulty in so doing arises from the irregularity with which the worm visits the skin surface, and the rapidity with which it leaves it when alarmed or disturbed. A patient may feel the animal in the neighborhood of the eye and may hurry off to his surgeon, only to find that in the interval it has disappeared. Again, he may arrive with the worm under the conjunctiva or in the lids, and yet his haste may be fruitless, owing to the worm diving into the deep tissues as soon as the surgeon attempts to examine the parts.

#### BIBLIOGRAPHY AND LITERATURE

In the literature of the United States, the removal in this country of *Filaria loa* from about the eye has been

---

* Read before the Section on Ophthalmology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Elliott: Tropical Ophthalmology.
2. Francis: Filariasis in Southern United States, Bull. 117, Hyg. Lab., U. S. P. H. S., June, 1919.
3. Ward: J. Infect. Dis. 3: 37, 1906.
4. Low and O'Driscoll: Lancet 1: 798-801 (April 16) 1921.

reported by Wilson,[5] 1889, at Bridgeport, Conn.; Loveland, 1898, at Clifton Springs, N. Y.; Milroy,[6] 1902, at Omaha; Vail,[7] 1905, at Cincinnati; Friend, at Chicago, and Begle,[8] 1918, at Detroit.

The Encyclopedia of Ophthalmology devotes twenty-nine pages to *Filaria*. Under the subject "Parasites Ocular" quoting Ward, it states that the first case of *Filaria loa* infestation reported in the United States was in 1890 by Dr. F. M. Wilson of Bridgeport, Conn. Ward, in his complete bibliography up to 1906, says that there are ninety-seven genuine cases of *Filaria loa* infestation reported in the literature of the world, from the first in 1770 up to 1905. These ninety-seven include many cases in which the worm was not removed. He reports a case of Dr. C. F. Friend of Chicago, who had removed a *Filaria loa* worm from a patient's eye. Vail of Cincinnati reported in 1905 the removal of a *Filaria loa* worm from under the skin of the upper eyelid in 1903. The patient was the wife of a medical missionary. The husband had previously removed four from her body, three from the upper eyelid and one from the breast. Twice he was able to remove only half of a severed worm; the remaining half seemed to give little trouble, the part left in the eyelid producing a small nodule. Vail claims his as the second removal reported in the United States, and gives Ward's complete world bibliography of 127 references. They concern various kinds of filariae, and are nearly all foreign references, mostly French. Vail does not mention the presence in the blood stream of the microfilaria.

McMurray's[9] bibliography quotes only Vail's article on the removal in the United States. He does not report any cases of removal of his own.

Gamble,[10] at the March, 1920, meeting of the Chicago Ophthalmological Society, exhibited a specimen of *Filaria loa* and gave an abstract of the literature on the subject. The specimen had been sent to him by a friend in the tropics. A search of the Ophthalmic Year Book from 1906 to 1922 fails to reveal any reports in the medical literature of the United States on the removal of *Filaria loa* in this country except one reported by Begle of Detroit in 1918. Begle's article states that there is no definite record of persons in the United States infected with *Filaria loa*, but that there are probably nine or ten in all. He reports a case in which he had removed a worm from the subconjunctival space in 1918. The patient gave a history of residing in West Africa twelve years previously, of Calabar swellings, and of diurnal microfilariae in the blood. The latter condition continued for the three years Begle had the patient under observation after the removal of the worm. The worm was 61 mm. long.

### REPORT OF CASE

D. M., a Scotchman, first came to my attention when Dr. M. J. Owens presented him at a meeting of the Kansas City Academy of Medicine in January, 1922, with a diagnosis of *Filaria* infestation. The history given then showed a good physical condition up to 1910. He went to the West coast of Africa in that year, and 1918 was again a resident there. In 1911 he had two attacks of swelling of the scrotum, and in 1917 had trench nephritis. In the past several years he had had a number of swellings, mostly on the arms and legs, at one time the leg swelling to twice the normal size. The usual swelling had been about half the size of an egg, lasted from a half hour to forty-eight hours, and was often hot and tender. He had been under the care of several physicians abroad for the filariasis, microfilariae being present in the peripheral blood stream at each examination in the daytime. He was under the care of Dr. Osler in 1917, and was given three injections of arsphenamin and three of neo-arsphenamin.

The patient was next seen, June 22, 1922, when Dr. Owens requested my presence in his office; the patient was there complaining of a filaria in his eye and Dr. Owens had seen it under the patient's conjunctiva. Within two or three minutes we were back in Dr. Owen's office, which is just across the hall from ours. Examination showed no filaria in sight under the conjunctiva, and the patient told us that he had felt it leave, traveling upward. He then gave us the following eye history:

Several years before he had felt the filaria under the conjunctiva while in London, and took a taxi to his surgeon's office; but when he arrived it had disappeared. Later while on board ship he felt it again around the eye and reported to the ship's surgeon, who saw it under the conjunctiva and instilled cocain, but it again left before the cocain became effective. He had felt it travel across the nose from one eye to the other. He was very anxious to have it removed, for he had heard of several cases in Africa in which there had been no return of the Calabar swellings after removal of a parent filaria. We told him to return immediately if he again felt it in the eye. That afternoon he returned saying it was in the right eye, and we immediately examined and easily saw the filaria under the conjunctiva, weaving about and extending from a point 8 or 10 mm. above the upper corneal margin down to the lower fornix, lying just beyond the temporal side of the cornea. It had the appearance of a piece of white thread or catgut. Without waiting to instil cocain we used forceps and grasped it and the conjunctiva overlying at its middle. The consistency in the forceps was about that of a damp piece of catgut. While it was firmly held in the forceps, cocain was instilled, and when this became effective a snip was made through the conjunctiva and the filaria, cutting the latter in half. The lower end of the upper half was easily seized with forceps and removed, sliding out smoothly. The lower half was weaving around, and after fishing about for it for a minute we easily removed it. The wound was dressed and gave us no more trouble, the small conjunctival wound healing nicely without suture. The filaria could undoubtedly have been removed without being cut, but we were quite anxious to get it, and it seemed more expedient at that instant to cut it in two. Removed, it had the appearance of a piece of clean, smooth, white catgut, and was 37 mm. long. It was mounted on a slide, but we did not determine the sex. Up to date the patient has had no more of the Calabar swelling, nor has he felt any manifestations of movements of other filariae. The microfilariae are still in the blood stream, but it is our understanding that the regular filariae never develop in the body from these.

900 Rialto Building.

5. Wilson, F. M.: Tr. Am. Ophth. Soc. (Hartford) **5**: 727, 1890.
6. Milroy, cited by Ward: Reference Handbook of the Medical Sciences **6**: 205-225, 1903.
7. Vail: Filaria Loa, Am. J. Ophth., December, 1905.
8. Begle, H. L.: Infestation with Filaria Loa, J. A. M. A. **76**: 1301 (March 7) 1921.
9. McMurray: Filaria Loa, Tr. Am. Acad. Otol. & Oto-Laryng., 1917, p. 188.
10. Gamble, W. E.: Am. J. Ophth., August, 1920, p. 617.

## ABSTRACT OF DISCUSSION

### ON PAPERS OF DRS. STARK AND KIMBERLIN

DR. EDWARD F. GLASER, San Francisco: Dr. Kimberlin's case is unique. As he states, there have been very few cases in the United States—probably less than twenty. About nine cases have been reported. His case is most interesting because of its rarity, and also because, disregarding the subjective symptoms that the patient must suffer, it is somewhat spectacular to be able to see a living nematode under the conjunctival tissue. On the Pacific Coast we have never reported a case of *Filaria loa*, but we have had cases of *Filaria bancrofti* among the Japanese, the Chinese, and the Filipinos. After the great fire, a large colony of Porto Ricans were brought here to help the labor problem, and they were quartered on Telegraph Hill. Their social and medical problem was solved by the Associated Charities, and solved chiefly through the Fruit and Flower Mission clinic. On the staff of the Fruit

and Flower Mission was an authority on tropical diseases, Herbert Gunn. He found about 10 per cent. of the Porto Ricans infested with *Filaria bancrofti*, although many of them showed no special symptoms. Some had enlarged lymphatics, hematuria, and a high degree of eosinophilia. He did not report any cases, nor did he see any cases of *Filaria loa*, nor did he report any eye symptoms in these cases of *Filaria bancrofti*. As far as treatment is concerned, he tried arsphenamin, quinin and various other drugs, and found that nothing seemed to have any effect on the patients. A man in Paris is working on an antiloa serum, and it is to be hoped that something along that line may be worked out that will help in the treatment and prevention of *Filaria loa*.

DR. J. S. LICHTENBERG, Kansas City, Mo.: I saw this patient. There was no evidence of any ocular affection. The patient felt as if at times the parasites went into the globe. I am quite confident he was wrong. There is no report in the literature of any parasite of this kind being within the globe. The point I want to emphasize is that when the parasite is found under the conjunctiva, we must not wait for local anesthesia. The parasite must be seized and anesthesia produced afterward. Otherwise, by its rapid movements it will disappear.

DR. ADOLPH BARKAN, San Francisco: I removed a *Filaria* thirty or thirty-five years ago. The case was reported in the early volumes of Knapp's *Archives of Ophthalmology*. If my recollection is correct, it was *Filaria medinensis*, which occurred in the pupil of the eye of a man from Australia. There were no particular symptoms of any kind. I cannot remember why he came to me. There was no pain or irritation, but there was a pretty little white thread floating about in the anterior chamber. The man was in a hurry. We applied a few drops of physostigmin so as to shut off the filaria in the anterior chamber of the eye, made a simple incision, and floated the filaria out. That, in my opinion, was the very first case of filaria observed in the United States and extracted.

DR. HERBERT MOULTON, Fort Smith, Ark.: Is this sheep-bot distinctly different from the bot-fly that lays its eggs on the legs of a horse?

DR. H. H. STARK, El Paso, Texas: The horse-fly and the sheep-bot are distinctly different. The sheep-bot does not lay eggs, but deposits larvae in the nose of the sheep.

DR. J. W. KIMBERLIN, Kansas City, Mo.: I think that Prof. Henry B. Ward mentioned Dr. Barkan's case.

---

# POSTINFANTILE TETANY

## REPORT OF THREE CASES

E. T. GIBSON, M.D.
KANSAS CITY, MO.

In the last few months, I have encountered three cases of tetany. One was recognized at once, one had been called hysteria before I saw it, and the third I considered a case of acroparesthesia for two weeks before making the correct diagnosis.

It is apparent that tetany of adolescents and adults is fairly common, but is frequently overlooked, in spite of the fact that the diagnosis is easy if one but thinks of it. For this reason, the three cases seem worth reporting.

### REPORT OF CASES

CASE 1.—W. R., a boy, aged 13, for the last four years in late winter and spring had had frequent tonic spasms of the extremities. The attacks came day or night, sometimes in the bath, at stool, after violent exercise and sometimes without any apparent cause. The attacks began with tingling and numbness of the fingers and toes; gradually the muscles stiffened, pain increased and in two or three minutes the attack reached its maximum. It passed off after a variable period of from fifteen minutes to several hours. When the attack was fully developed, the toes were rigidly pointed downward, and the hands assumed the typical obstetric position. There were frequent attacks of dyspnea, with whistling noises in the chest which were loud enough to wake the family. During the months of January, February and March of each year, his hair fell out. With warm weather, the tonic spasms and attacks of dyspnea disappeared and his hair grew again. For the last four years the patient had had a grayish pallor, but without anemia, and three or four watery bowel movements daily, immediately after eating. In the last four years he had had five nocturnal convulsive attacks with unconsciousness. In March, 1923, when I first saw him, Chvostek's Trousseau's, Pool's, Erb's and Hoffman's signs were positive. In July, his hair was entirely restored and he had no symptoms of tetany. All signs, including the typical Chvostek, disappeared, but even yet his facial muscles twitched when tapped. He was treated with calcium lactate.

CASE 2.—B. B., a woman, aged 32, admitted to the hospital, June 11, 1923, complained of numbness and tingling in the hands, with frequent painful cramps in which her arms and legs became stiff, and her feet and hands assumed the typical position. She was restless, anxious and depressed, and slept very little. During her paroxysms she became disoriented and saw imaginary persons about her. Her husband, in reporting her illness at the outpatient department, gave a description of typical tetany spasms, and stated that the patient was "out of her head" part of the time. Examination showed two healed operative incisions in the neck, one over the upper pole of the right lobe of the thyroid gland, the other a low collar incision.

The patient had not felt well since a miscarriage in January, 1921. Since the autumn of 1922, she suffered from a slowly increasing nervousness, with palpitation of the heart, rapid pulse, tremor of the fingers and slight enlargement of the thyroid gland. In January, 1923, she had an attack of palpitation of the heart; she became cyanotic, her hands became numb and stiff, and she felt excessively faint. The hospital record showed that, May 3, a preliminary ligation of blood vessels at the right upper lobe was performed, and ten days later both lobes of the thyroid gland were resected, leaving a small portion of the gland at the upper poles. Operative recovery was good. The third day after operation, the patient complained of numbness and stiffness of both hands, pain in the right forearm, and inability to use the right hand. From this time until her discharge, June 4, she was restless, slept poorly, and complained of numbness and stiffness in the extremities. She was at home from June 4 to June 13, and in this time she developed the typical tetany spasms and psychosis described heretofore. She improved rapidly under the administration of calcium lactate intravenously and by mouth, and has had no more spasms. She is still nervous and has a positive Chvostek sign. Examination of the material removed at operation made by Dr. Wahl of the University of Kansas failed to show any parathyroid tissue.

In my opinion, this patient was suffering from parathyroid deficiency before her operation, in addition to hyperthyroidism. The attack of January, 1923, seemed distinctly tetanic. Furthermore, the symptoms were not severe enough for a complete parathyroidectomy.

CASE 3.—S. K., a woman, aged 20, unmarried, referred by Dr. J. A. Fulton, complained of numbness of the hands and feet and attacks of general weakness. She had had no illness whatever. In March, 1923, she noticed that her hands and feet frequently became numb. This condition gradually increased in severity and annoyed her, particularly because it interfered with sewing. With the numbness she felt weak all over, and became dizzy on arising suddenly. She was an exceptionally strong and vigorous girl, and had never felt weak before. She had a high color, dilated pupils, dermographia, and moist hands and feet. The blood pressure was 124 systolic and 74 diastolic. The basal metabolic rate was +4. Neurologic examination, including sensations, proved her to be entirely normal.

I considered this case an angioneurosis similar to Putnam's acroparesthesia, until a review of the history, talked over with the patient, brought out the fact that to her "numbness" meant

a prickling sensation, and also stiffness. This at once suggested tetany, and a reexamination showed very distinct Chvostek's, Hoffman's, Erb's and Trousseau's signs.

### COMMENT

Paresthesias of the extremities without organic neurologic signs are often difficult to evaluate. Some are due to tetany.

While the peculiar spasm of the muscles of the extremities is the best known manifestation of tetany, Case 1 shows that effects due to involuntary and sensory nerves (dyspnea, diarrhea and atrophy of hair) may be just as prominent.

In all three cases, twitching of the facial muscles produced by tapping was more intense, though, of course, of less extent, as one followed the nerves toward the muscles, the greatest contraction being obtained over the muscle itself. In one case, a twitch could be obtained by percussing the muscle after mechanical irritability of the nerve had disappeared. This observation lends some clinical support to the conclusion from experiments in guanidin tetany by Paton [1] and his fellow workers that the irritable point is at the neuromuscular junction.

The Chvostek sign is not pathognomonic but is strongly suggestive if bilateral and combined with electrical overirritability of motor and sensory areas. I recently saw a Chvostek sign involving all the facial muscles of the left side in an old man who had suffered from herpes zoster of the ophthalmic division of the left fifth nerve three months before, and in whom neuralgic pains still persisted.

There are a few cases in the literature interpreted as essential hypoparathyroidism,[2] though the syndrome can hardly be considered as more than speculative. Possibly Case 2 was of this kind, since there was a typical tetany attack four months before thyroidectomy.

Treatment with calcium was satisfactory, so far as symptoms were concerned. From none have the signs of latent tetany yet disappeared. The proximate cause of the manifestations of tetany seems to be calcium deficiency. Study of the literature does not indicate involvement of the parathyroid bodies as a necessary ulterior cause, unless an unsuspected hypoparathyroidism preexisted in the cases following forced breathing, whether voluntary [3] or postencephalitic.[4]

1000 Rialto Building.

1. Paton: Quart. J. Exper. Physiol. **10**: 203-377, 1917.
2. Hurst, A. F.: New York M. J. **115**: 403-404 (April 5) 1922.
3. Goldman, Alfred: Clinical Tetany by Forced Respiration, J. A. M. A. **78**: 1193 (April 22) 1922.
4. Barker, L. F., and Sprunt, T. P.: Endocrinology **6**: 1 (Jan.) 1922.

**The Campaign Against Yellow Fever.**—Twenty-five years ago yellow fever menaced the Western Hemisphere from Santos, Brazil, to Washington, D. C., and Cairo, Ill.; on the west coast it ranged from southern Peru to northern Mexico. Gorgas exterminated the infection from Cuba and Panama; Oswaldo Cruz and his colleagues brought it under control in Santos and Rio; Wolferstan Thomas, Converse, and the Brazilian authorities drove it out of the Amazon Valley; Connor freed Guayaquil. During the past year Henson has completed the conquest of the infection in Peru, while Lyster, White, and their colleagues, working with government authorities, have seemingly exterminated the disease in Central America and have the situation well in hand in Mexico. At the end of 1922, the only infected areas remaining in the Western Hemisphere appeared to be eastern Mexico and a narrow costal zone in eastern Brazil from Ceará to Bahia.—Report of International Health Board of the Rockefeller Foundation, 1922.

## *Special Article*

# EPIDEMIC (LETHARGIC) ENCEPHALITIS AND ALLIED CONDITIONS *

SIMON FLEXNER, M.D.
NEW YORK

The reappearance of cases of epidemic encephalitis in Europe and America in the last few months has served to emphasize the sinister character, as well as our imperfect knowledge, of the disease. Moreover, it has served to remind us of the notable fact that within a period of about twenty years, several epidemic diseases having their chief seat of injury in the central nervous organs have prevailed widely in America and in other parts of the world.

Indeed, the two decades of the new century have witnessed destructive outbreaks of epidemic meningitis, epidemic poliomyelitis, and latterly epidemic encephalitis. This list does not include an epidemic disease presenting peculiar features which arose in 1917 and 1918 in New South Wales, Queensland and Victoria. According to different reporters, this malady was regarded merely as an unusual form of poliomyelitis or as a mysterious disease to which the name Australian X disease has been affixed.

Of these four epidemic diseases, we speak confidently of the microbic etiologic or inciting agent in two instances—epidemic meningitis induced by the meningococcus, and poliomyelitis induced by a filter-passing organism or virus, possibly but not certainly cultivated outside the body and thus rendered microscopically visible. Of the exciting agents of epidemic encephalitis and of Australian X disease, assuming the lattter to be an independent disease, we have no certain knowledge.

### POLIOMYELITIS AND AUSTRALIAN X DISEASE

As regards these last two diseases, certain questions present themselves bearing on their independence or their connection etiologically with other more accurately defined affections.

Thus, Australian X disease may be said to have certain obvious affinities with poliomyelitis. Aside from its prevalence in the season corresponding to our late summer and autumn, the character perhaps, as indeed the distribution, of the lesions of the nervous system agrees with those of poliomyelitis. I have had the privilege, through the courtesy of Dr. Cleland, to examine several specimens of the brain and spinal cord of fatal human cases, and I have found that the essential lesions conform quite accurately with those occurring in fatal cases of epidemic poliomyelitis in the United States. I should not be able to say that in these fatal instances the involvement of the brain structures as distinguished from spinal cord structures preponderated exceptionally. The infiltrative character of the lesions about the blood vessels, the foci within the tissues and the degeneration and phagocytosis, neuronophagia of the nerve cells, in the spinal cord and basal ganglions, hardly differ in kind from those found in

* From the Laboratories of the Rockefeller Institute for Medical Research, New York.

* Based on the Frederick A. Packard Lecture of the Philadelphia Pediatric Society, read before the College of Physicians, Philadelphia, April 10, 1923.

* Owing to the lack of space, this article is abbreviated in THE JOURNAL by omission of the bibliography. The complete article appears in the author's reprints.

these structures in poliomyelitis. Moreover, the relative escape of the cortical structures is similar in the two instances.

In my opinion, the pathologic histology of X disease, to the extent that it shows close resemblances to frank poliomyelitis, distinguishes it from epidemic encephalitis. This is particularly noticeable in respect to the extensive involvement of the spinal cord, which scarcely occurs except as a minor process confined to the cervical region in fatal cases of encephalitis, but it is noticeable also in the way the lesions are distributed in the basal ganglions and in their intensity.

The high mortality of Australian X disease (70 per cent.) and the small number of recoveries in which there is residual paralysis (two in thirty-five recoveries, with two more presenting signs of mental disorder) are unlike ordinary poliomyelitis. The disparity may, however, be related to the exceptionally high mortality. The age distribution shows some degree of variation from the usual epidemics of poliomyelitis: Among 134 cases, 50 per cent. of the patients were below 5 years; 16 per cent. from 5 to 10 years; 7 per cent. from 10 to 15 years, and 30 per cent. over 15 years of age. Males were attacked twice as often as females. As has been observed in poliomyelitis, infants and young children, when affected, had a better chance of survival than older children and adults.

Therefore, according to this comparison, it is quite possible that Australian X disease is merely an exalted form of epidemic poliomyelitis. The present difficulty in harmonizing the two affections arises, as I view it, not so much from variation in clinical and histologic phenomena, as from the results of inoculation tests on animals.

Breinl made two sets of inoculations. In one he used the cerebrospinal fluid withdrawn from a severely ill patient for intracerebral injection into a species of *Cercopithecus,* which developed symptoms and died on the sixteenth day after the inoculation. The microscopic lesions in the basal ganglions and spinal cord are said to have been typical of experimental poliomyelitis. Reinoculation of a second monkey failed to produce results, possibly because this animal succumbed too soon to an attack of gastro-enteritis. The second experimental inoculation was made with the spinal cord of a fatal human case. Nervous symptoms appeared on the twelfth day, and the monkey was chloroformed on the nineteenth day. The histologic lesions were characteristic. No further passage seems to have been made with this material.

The discrepancy in these tests consists in the successful inoculation with cerebrospinal fluid of human cases of Australian X disease. Although many attempts have been made, no one either in the United States or elsewhere has succeeded in conveying experimental poliomyelitis to monkeys with the cerebrospinal fluid of cases of epidemic poliomyelitis. True in 1932.

But this exception is small as compared with the experimental successes attained by Cleland and Campbell. They first conveyed the experimental disease to the monkey, then from monkey to monkey in series, from monkey to sheep, from sheep to sheep, back from sheep to monkey, and lastly from monkey to one horse and one calf. Rabbits resisted inoculation. The virus of poliomyelitis, as known to American and European investigators, is practically limited to monkeys in its power to excite an experimental infection. No success has ever been recorded in the sheep, calf or horse.

Can this great discrepancy in the extent of the pathogenic propensities of the two viruses be accounted for? In my opinion, it cannot be explained at the present time. Dr. Cleland has kindly sent me histologic specimens taken from the brain and spinal cord of the successfully inoculated monkeys, sheep, calf and horse, and all show perivascular infiltration and some show neuronophagocytosis. Assuming no accidental, secondary, complicating bacterial infection to have intervened in the course of the transfers of the virus through many animals, the disparity cannot at present be resolved so as to bring the two experimental diseases, Australian X disease and poliomyelitis, into harmonic relationship.

### EPIDEMIC ENCEPHALITIS AND EPIDEMIC INFLUENZA

Epidemic, or lethargic, encephalitis has in turn certain, if merely chronological, relationships with epidemic influenza. The question is still being actively discussed, whether after all the encephalitis is not a form of influenza, in which the stress of the pathologic effects falls on the central nervous organs. We are at present not able, through lack of accurate knowledge, either to affirm or deny this proposition. We do, however, possess a mass of circumstantial and experimental evidence tending to uphold the independent nature of epidemic encephalitis.

In using the term independent, I have in mind the notion of a direct etiologic separation of influenza and epidemic encephalitis: whether an attack of the first acts to predispose to an attack of the second in the manner of the predisposing effect of influenza on bacterial affections of the respiratory tract, is another question awaiting close study.

Economo, in his original publication, in which he described the first cases seen in Vienna and to which he applied the now commonly employed name of lethargic encephalitis, specifically states that they preceded in time the outbreak of influenza. This observation may not be conclusive, in view of the fact that epidemic influenza was already spreading over Europe in 1916. On the other hand, it has evidential value as bearing on the numerical relationship of cases of influenza and cases of encephalitis recognized at this period.

It is commonly held that the first cases of lethargic encephalitis arising in France and in England followed the first ones observed by Economo, and that the disease evaded the military blockade existing at the time and penetrated from Austria into the two other countries. This view has been contested by Cruchet, who holds that he encountered a considerable number of such cases in the Bar-le-Duc district in 1916-1917. However this may be, one thing is quite certain; namely, that because of war conditions the disease was discovered in France and England before Economo's writing on the subject became known there. This coincidence in time between the appearance of influenza and the encephalitis is more evident in these two countries than in Vienna; and the same circumstance is true of the United States, where cases of encephalitis were hardly noted before the beginning of 1919.

It looks, therefore, as if a good case, epidemiologically speaking, can be made out for a westward trend or movement of the encephalitis from possibly Austria by way of France and England to the United States

between 1916 and 1919. But it cannot in the same way be determined so easily what relation, if any, exists between the influenza, which also moved westward from Europe to America, and the encephalitis. More clarity may perhaps be brought into this search by a study of earlier as well as of recent records of influenza with which clinical states or maladies supposed to be encephalitis are in some way connected.

In employing this method of examination, I think it well to disregard the highly indefinite instances of a peculiar form of lethargy or coma, called by the name of nona, said to have prevailed in 1890 in northern Italy and countries farther east, of which much has been written. The medical writers of the period could make little that was clear and convincing out of the popular reports of the malady. Likewise the so-called outbreak of "sleeping sickness" in Tübingen in 1712, said to have accompanied an influenza epidemic, rests on a slender and not very substantial historical footing.

Of far greater value are the reports of the cerebral complications of epidemic influenza which have come down to us with the voluminous literature of the pandemic of 1889-1892. In completeness, the records of the clinical features, pathologic effects and bacteriologic findings of those years rival the reports of the present pandemic period. And yet, as will appear, what may be rightly considered as the encephalitic complications of the influenza were on the whole so infrequent as to be regarded as exceptional.

For our purposes it will not be necessary to review the extensive literature of the time on influenza in order to secure the needed information. Two or three names stand out boldly from the 1890 period as providing the facts we are in search of. We need, perhaps, concern ourselves only with the writings of Leichtenstern and Strümpell. Both published their experiences at the time, and in addition Leichtenstern assembled the important knowledge for his monographic article in Nothnagel's Handbook, which appeared in 1896. It should suffice, therefore, to examine what these observant clinicians and pathologists have to say on the encephalitis attending influenza.

I shall deal first with the papers of Strümpell, and for a reason that will appear immediately. He published two papers in 1889 and 1891 describing two cases of encephalitis, probably the same in the two papers, one in a man of 25 and the other of 64. Neither was related to influenza, and, indeed, they had been observed prior to the influenza epidemic of 1889-1892, in the midst of which the second paper was published. The remarkable thing is that in the 1891 paper no new cases are cited and no reference to an unusual prevalence of encephalitis as part of the influenza epidemic is mentioned.

But even more significant is the fact that Strümpell returned to the subject in 1920 and published a paper under the title "Concerning Encephalitis Epidemica," in which he expresses himself unreservedly in favor of the independent etiologic origin of the disease. He discusses the chronological relationship between the encephalitis and influenza, and remarks that the high point of the former was reached in Leipzig in 1920, at a time when the influenza was as good as over. Strümpell then emphasized two further details: first, that it is exceptional for the attack of encephalitis to set in with symptoms characteristic of influenza, and, second and more important, that in the cases of encephalitis following influenza, the anatomic brain lesions are visible to the naked eye and consist of hemorrhagic foci, while in epidemic encephalitis such focal lesions are infrequent, and aside from hyperemia and swelling of the organ as a whole, the brain shows no gross change.

Leichtenstern has described his experiences with encephalitis in three papers, the first being included in his lectures to the physicians of Cologne on epidemic influenza, which appeared in 1890. He extended this part of the subject in the papers of 1892 and 1895.

To Leichtenstern and to Strümpell belong the credit of isolating the symptom complex of an independent encephalitic affection corresponding to the already well known myelitic affection, and to Leichtenstern we owe the inclusion of epidemic influenza as one of the general diseases with which such an encephalitis may be associated. Indeed, he limits the three general diseases leading to encephalitis to epidemic cerebrospinal meningitis, ulcerative endocarditis, and epidemic influenza.

His description of the naked eye appearance of the brain is admirable: "The focal lesions consist of numerous, closely packed, pointlike hemorrhagic areas between which the tissue is softened and of grayish pink. The seat of the lesions is chiefly in the central ganglions and sometimes the cerebral cortex. Emboli are not demonstrable." The microscopic findings consisted of hyperemia, extravasation of red corpuscles, and round cell infiltration of the vascular sheaths.

In the monographic article of 1896, Leichtenstern deals extensively with the many nervous complications of influenza, and remarks that with an epidemic disease which attacks 50 per cent. of the population, it follows easily that many cases of nervous and other affections are attributed to it, although without the influenza they would have arisen either then or at a later time. He adds further that the recent influenza pandemic with its sequels has brought something new into the neurologic field of knowledge; namely, it has shown us that, compared with all other infections, it is distinguished by its neurotoxic propensities. The conclusion he draws is that "the influenza toxins are severe nerve poisons."

These statements refer, however, not to numerous instances of severe and even fatal nervous complications of influenza, but to a wide variety of functional and organic effects which ultimately, although with notable exceptions, subside.

It is significant that the involvements of the cerebral motor nuclei leading to certain paralyses of the eye muscles and palatal and swallowing muscles, muscle groups innervated from a common nuclear region, are spoken of as taking invariably a benign course, owing to which circumstance the observational material was entirely clinical. "One thing is certain: No gross anatomic change exists, as the assumption of a gross lesion contradicts the lack of all severe cerebrobulbar and spinal symptoms of disease."

The failure to discern cases of lethargic and kinetic forms of encephalitis, such as constitute the mass of cases of epidemic encephalitis of our era, cannot be ascribed to want of observational perspicacity. Indeed, Leichtenstern describes a comatose form of influenza and is thereby led to mention similar occurrences as recorded in the history of epidemics of the disease from 1580 up to and including the Tübingen instance of "sleeping sickness" of 1712 and the "nona" of 1890. But he deals summarily with the old stories, and looks on them as depicting various complicating conditions,

and remarks that "it would not occur to any observer of the recent epidemic to apply such names."

The purpose of the preceding presentation has been to define our theme as narrowly as may be. The conclusion we have reached seems clearly to be this: that the pandemic of lethargic encephalitis of the second decade of the twentieth century is quite unprecedented in recorded medical history, and is probably not merely an unusual nervous manifestation of epidemic influenza, but is rather an independent affection, etiologically considered, to be compared in its specific nature with other defined pathologic entities, such as typhoid fever, tuberculosis, poliomyelitis and epidemic meningitis.

### ETIOLOGY OF EPIDEMIC INFLUENZA

We are about to pass now to the consideration of another topic; namely, the evidence for the experimental induction of epidemic encephalitis and the deductions based on the experimental results achieved. Before, however, entering on this main topic, a word should be said of present views on the etiology of epidemic influenza, since the meaning of the bacteriologic findings of 1892 has come to be seriously questioned.

In 1918, Pfeiffer's bacillus was generally regarded as the probable microscopic incitant of epidemic influenza, although evidence was accumulating with which to assail its commanding position. Since its discovery in 1892, the number of hemoglobinophilic bacilli isolated had been increasing; it no longer held the field alone. Moreover, the wide application of immunologic tests to the hemoglobinophilic bacilli cultivated from the upper respiratory mucous membrane served to show that in the interepidemic period, influenza bacilli, as Pfeiffer's organism came to be termed, were present there quite frequently. And yet symptomatic influenza was notably absent.

With the influenza explosions of 1917 and 1918, the search for Pfeiffer's bacillus was renewed and extended. The remarkable thing was the inconstancy with which it was found in the respiratory tract. A part of the failure to cultivate it may be attributed to disorganization due to war conditions. But the inconstancy lasted beyond that period, and has been emphasized many times since.

In the meantime, the direction of the bacteriologic investigation of influenza had changed; new methods had opened the field of the minute, filter passing micro-organisms to exploration. The outstanding studies of this period have been made by Olitsky and Gates. They have enriched bacteriology with a series of minute, filter passing, anaerobic bacilli, cultivated from the respiratory mucous membrane, unsuspected in 1892, among which seems to be the microbe of epidemic influenza. At least one species, called *Bacterium pneumosintes,* has been consistently obtained in pure culture from early cases of epidemic influenza, distinguishable by immunologic and other reactions from all the others. This bacillus, when inoculated into rabbits, induces slight lesions of the lungs, predisposing to ordinary bacterial pneumonic infections, and at the same time affects the number of circulating mononuclear leukocytes, in a manner corresponding with the leukopenia of epidemic influenza in man. It is agglutinated also by the blood serum of patients that have recovered from influenza.

But what for our present purposes is more important is the noteworthy fact that the micro-organism exhibits no special affinity for the brain of the rabbit and tends not to incite a fatal encephalitis in that animal when inoculated into the lung or even subdurally.

### EVIDENCE FOR EXPERIMENTAL INDUCTION OF EPIDEMIC ENCEPHALITIS

The epidemic encephalitis of 1916-1917 and later presented an opportunity, embraced by many bacteriologists, to study by current methods the nature of the disease. It was supposed that, fortune favoring, the problem of etiology might be solved in this manner.

Although Wiesner isolated a gram-positive, coccus from one of Economo's first cases and with it induced an encephalitis in a monkey through intracerebral inoculation, his finding has since been generally discredited. The coccus can be viewed as a secondary invading or merely contaminating bacterial organism; its power to incite inflammation of the brain on inoculation into animals is common to the class. This lack of specific action is noticeable also in the coccus isolated by Rosenow and by other observers.

The experimental studies which most influenced the bacteriologic investigation of the encephalitis were those of epidemic poliomyelitis. In view of the nature and location of the lesions in the former malady, this fact is quite natural. Hence, very early, emulsions of brain tissue from fatal cases of encephalitis were inoculated by several investigators into the brain of monkeys, and, a little later, into the brain of rabbits. For the most part, nothing consistent came of the experiments with monkeys, although, as will appear presently, a very few positive experiments were reported. Even with rabbits, many otherwise competent and experienced investigators failed to achieve successful transmission of definite disease. The exceptions to this result are somewhat more numerous, and, in the light of subsequent events, significant.

It will be recalled that the study of filtered washings and extracts of the nasopharynx in poliomyelitis led to conclusive results in determining the mode of infection in that disease. A group of workers at Mount Sinai Hospital in New York turned at once to this source of material for the investigation of cases of encephalitis. As early as May 3, 1919, they reported successful infection of monkeys with human brain tissue taken from a fatal case and with washings from the nasopharynx, and they further reported obtaining a filterable "virus" from a fatal human case, which, injected into the monkey, induced hemorrhagic encephalitis. From the last animal a second monkey was stated to have been successfully inoculated. By November, these statements were expanded to include the rabbit as subject to the inoculation, the virus having been passed through four generations in these animals and having been returned successfully to a monkey and then reinoculated into rabbits. It was further stated, in conformity with previous observations in poliomyelitis, that after an intracranial injection, the virus may be recovered from the nasopharynx, and that about 50 per cent. of the rabbits employed for inoculation proved resistant. Finally, in a note to this paper it is added that the cerebrospinal fluid of a fatal human case induced the disease in rabbits and that the experimental disease had been communicated by means of filtrates of the rabbit brain through a series of four animals.

The analogy with poliomyelitis was carried a step further at Mount Sinai Hospital when the cultivation by the Noguchi method of a minute, filtrable organism was announced. The cultures were obtained from the brain of inoculated rabbits, monkeys, from human cere-

brospinal fluid (ten out of twenty specimens tested), and from filtrates of the nasopharyngeal mucosa and its secretion of encephalitis cases. With these cultures, rabbits and monkeys were said to have been inoculated successfully. These cultivation experiments stand alone; they have never in any degree been confirmed except by Thalhimer, previously of the Mount Sinai Hospital staff.[1]

Finally, the Mount Sinai workers have suggested the employment of the rabbit for purposes of diagnosis in dubious cases of epidemic encephalitis. They base the recommendation on success achieved with eleven of fourteen nasopharyngeal washings (78 per cent. positive) and twelve of sixteen cerebrospinal fluids (75 per cent. positive).

I have permitted myself to go into the details of the Mount Sinai results because they are by far the most varied and successful reported, and also because they may be said to have opened the subject of epidemic encephalitis to experimental exploration. However, in the three or four intervening years, new points of view have been secured, which may come to modify fundamentally the concept based on these early studies.

At this juncture it is more enlightening to deal with the confirmations than with the failures to confirm the Mount Sinai experiments. The fact is interesting, and may prove to be significant, that while a few investigators have been able in some degree to repeat these experiments, others have failed to do so. In no instance has the Mount Sinai work in its entirety been confirmed.

The first unmistakably positive result following the successes just referred to came from Levaditi and Harvier, who record that in February, 1920, after several failures, they injected intracerebrally one monkey and two rabbits with an emulsion of brain tissue taken from a fatal case of encephalitis. The monkey remained well, but one rabbit died on the eighth day following the inoculation. With the active brain material, spoken of as virus, taken from this animal, certain characteristics were determined; namely, that it can be maintained by regular rabbit passages, becomes of "fixed" virulence (killing in four, five or six days), and after several (seven?) passages is pathogenic for monkeys and guinea-pigs. Other features, such as filtrability, glycerol resistance, and noncultivation by usual methods, previously noted by Loewe and Strauss, were described. Moreover, inoculability in rabbits by sciatic nerve injection was reported. The symptoms of the infected rabbits are said to be torpor, myoclonia, and meningeal irritation producing rigidity and fleeting convulsions. The brain lesions are stated to consist of mononuclear cell meningitis, and perivascular infiltration and leukocytic invasion of the cerebral cortex.

This initial success was repeated once by Levaditi and his co-workers. Besides this one, among about thirty tests with various materials taken from cases of epidemic encephalitis, one other, namely, an inoculation of rabbits with the nasal secretion derived from a case of epidemic encephalitis, resulted positively. These two successful inoculations have provided the materials for a long series of reports which have been collected into a monograph, to which further reference will be made later.

Another reputed successful transmission, directly to the monkey, is reported by McIntosh and Turnbull. This example can be dealt with briefly, since the brain of a fatal human case was placed entire in 33 per cent. glycerol, where it remained for fourteen days before portions of the much softened organ were removed for the making a Berkefeld filtrate, which was used for intracerebral injection. The inoculated animal had a convulsion six days later, and died nearly two months after the injection. Perivascular lesions were present in the optic thalamus, but their nature must appear problematical. Transmission in series to other monkeys seems not to have been achieved.

A more important series of confirmatory results is supplied by Doerr and his associates. As will appear a little later, Doerr very naturally, because of his earlier studies on experimental herpes, entered on the study of experimental epidemic encephalitis. After many failures to infect rabbits with various materials, Doerr finally, in 1921, recorded a successful inoculation with the cerebrospinal fluid of a fatal human case of encephalitis. In 1922, he reported a second and third successful transmission, both times with central nervous tissues. We will consider very briefly the circumstances surrounding the two last. In the second instance, the cerebrospinal fluid drawn twenty-four hours before the death of the patient did not infect either by subdural or by corneal inoculation. A portion of the medulla, removed at the necropsy without special precautions apparently, was washed through fifteen changes of sterile salt solution, and then inoculated intracerebrally and corneally each into three rabbits. Moreover, a portion of the brain tissue was conserved in glycerol and used for the intracerebral inoculation of four rabbits three weeks later. Of these ten rabbits, one receiving an intracerebral injection of the fresh brain, developed symptoms of encephalitis and succumbed. In the third instance the brain at necropsy showed confluent punctiform hemorrhages and areas of softening of the cortex. Four rabbits were unsuccessfully inoculated with the cerebrospinal fluid; and of six injected intracerebrally with the brain tissue, one succumbed. In this one animal there was a complicating staphylococcus infection extending from the trephine opening. A portion of the brain of the rabbit was kept in glycerol for two weeks and was then employed successfully for further inoculation.

Up to this time, no successful transmission had been reported from a German laboratory. Schnabel, an associate of Doerr's, had in the meantime become attached to the Robert Koch Institute in Berlin, in which he resumed the study of experimental encephalitis, reporting a single successful transmission with cerebrospinal fluid in 1922. Schnabel tested materials—cerebrospinal fluid, saliva, pharyngeal secretion—taken from four clinical cases of epidemic encephalitis in subacute or chronic stages. The cerebrospinal fluids were injected into the brain of rabbits; the other materials were inoculated into the eye. All failed except in the instance of one specimen of saliva, which induced an herpetic keratitis. Schnabel does not, however, regard this as indication of the presence of the virus of encephalitis; he inclines to view it rather as the effect of the herpetic virus. In discarding this doubtful result, Schnabel has shown a commendable critical faculty, too little perhaps

1. Efforts have been made repeatedly at the Rockefeller Institute with human and rabbit materials to confirm these results, but always without success. Recently, at my request, Dr. McCartney restudied the question. Several samples of encephalitis virus, so called, and of herpes virus were available. The interesting fact emerged that under the anaerobic conditions of the Smith-Noguchi cultivation method activity is quickly lost by the virus; it persists longer in a simple medium such as ordinary dextrose broth incubated either aerobically or anaerobically. No evidence of increased activity was ever secured, and the microscope never disclosed bodies of micro-organismal nature.

in evidence in interpreting the results of the experimental study of epidemic encephalitis.

The reputed success recorded by Schnabel was secured with the cerebrospinal fluid of a case diagnosed as acute epidemic encephalitis. The centrifugated sediment was inoculated into six rabbits, two by the corneal and four by the subdural route. Only one of the latter gave a positive result. Seven days after the injection, opisthotonos, restlessness and turnings were noted. Aside from a lesion at the site of inoculation, the midbrain and medulla showed perivascular infiltration and ganglion cell degeneration. This sample of the virus was readily carried forward both by corneal and by cerebral inoculation. In the animals infected by way of the cornea, general or encephalitic symptoms leading to death sometimes occurred. When, however, the rabbits had passed successfully through a corneal infection six or eight weeks before, they proved refractory to inoculation with the herpes virus, just as rabbits surviving corneal inoculation with the virus of herpes proved resistant to the encephalitis virus.

### RESULTS OBTAINED

We have now reviewed all the consistent experimental results obtained by those investigators who look either with favor or with conviction on the problem of epidemic encephalitis as in essence solved. I have excepted intentionally another group of investigators who also regard the problem as solved, but whose experimental results are not in full harmony with those we have been considering. To these discordant findings we are to return presently. At this point it will be profitable to restate numerically just what has been attained by the three sets of investigators; namely, those of Mount Sinai Hospital, Levaditi and his co-workers, and Doerr and his associates, on the basis of whose reports present belief in the nature of the inciting agent in epidemic encephalitis mainly rests.

At the outset, we encounter two diametrically opposed attitudes toward the experimental induction of the disease in the most susceptible animal—the rabbit. According to the Mount Sinai workers, with whom Thalhimer is in accord, the experimental disease is so readily provoked that doubtful clinical cases can be resolved by resorting to rabbit inoculation. In respect to this essential point these workers stand alone. To the extent, therefore, that their findings cannot be repeated and confirmed, they cannot be accepted as decisive and final.

All the other investigators take the position that initial infection of the rabbit is very difficult and highly uncertain. Hence several animals—four, five, six—should be inoculated with a given material. Usually, if any one of the number develops symptoms. It is agreed that once the "virus" is implanted successfully on the rabbit, subsequent transmission readily takes place.

It is so probable as virtually to be quite certain that the monkey is refractory to infection, either with original human material or with material derived from the infected rabbit. The very few apparently successful inoculations of the monkey are best explained as accidents—that is, obscure intercurrent effects due to trauma, bacterial infection, or the like. This probability disposes of the reputed transmission to the monkey by McIntosh and Turnbull, even on other grounds unconvincing.[2] However, other laboratory rodents—the guinea-pig, rat and mouse—can be infected from the rabbit. But no other class of laboratory animal—dog, cat, pigeon—has proved susceptible to inoculation.

Critical examination of Levaditi's reports indicates that from among inoculations made with thirty separate sets of specimens derived from cases of epidemic encephalitis, he succeeded in establishing in rabbits one active virus. The second virus which he describes was obtained from nasal secretion, which in the light of present knowledge of the herpes virus must be regarded as suspect. Schnabel under similar circumstances did so regard a positive experimental result. And yet Levaditi has published a large series of papers containing, it is true, often very interesting and important experimental observations, but leading him to wide, fundamental conclusions on and conceptions concerning the nature of epidemic encephalitis, based really on a single unequivocal experimental result.

The results secured by Doerr are somewhat more impressive. Moreover, this investigator has not taken a final position, but has left himself an opening through which to withdraw in the event that the so-called virus of encephalitis should, as knowledge grows, lose its present important standing. As will be recalled, he and his associates isolated three active strains of virus—one from the cerebrospinal fluid, one from brain tissue directly, and one from brain tissue indirectly through a rabbit which had succumbed to an intercurrent staphylococcus infection. Doerr's former associate, Schnabel, also isolated a strain from cerebrospinal fluid.

Aside, therefore, from such unequivocal strains, not now determinable with certainty, as may have been secured by the Mount Sinai Hospital workers, belief in the solution of the etiology of epidemic encephalitis rests on the successful inoculation of a transmissible disease to rabbits with material taken from five cases of clinical epidemic encephalitis—one in France, three in Switzerland, and one in Germany.

*(To be continued)*

2. This view of the accidental nature of the perivascular and infiltrative lesions in the monkey is upheld by the recent observation of Lacke (Arch. Neurol. & Psychiat. **10**: 212 [Aug.] 1923) of their spontaneous occurrence in monkeys in captivity.

## New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

**DIPHTHERIA ANTITOXIN, CONCENTRATED** (See New and Nonofficial Remedies, 1923, p. 283).

Cutter Laboratory, Berkeley, Calif.

*Diphtheria Antitoxin Globulin.*—Also marketed in syringes containing 20,000 units.

**VACCINE VIRUS** (See New and Nonofficial Remedies, 1923, p. 293).

Cutter Laboratory, Berkeley, Calif.

*Glycerinated Vaccine Virus.*—Also marketed in packages containing one capillary tube.

**GONOCOCCUS VACCINE** (See New and Nonofficial Remedies, 1923, p. 304).

Cutter Laboratory, Berkeley, Calif.

*Gonococcus Vaccine.*—Marketed in vials of 5 Cc. and 20 Cc., each cubic centimeter containing 500 million cocci suspended in physiological solution of sodium chloride with 0.4 per cent. of cresol.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - - Six dollars per annum in advance

*Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.*

SATURDAY, NOVEMBER 17, 1923

## MEDICAL PUBLICITY

If there is any subject especially prominent in medical discussions today, it is the relationship of the medical profession to the press and to the securing of publicity for scientific medicine. In addresses before medical societies and in the deliberations of national organizations, this matter has had a prominent place. Practically every important medical organization today arranges for publicity as a routine part of its annual session. As a result, it is safe to say that the public is becoming better and better acquainted with medical progress and with the ideals of the medical profession. Nevertheless, there are so many factors involved in the securing of satisfactory publicity that there is chance of a serious recoil as the inevitable result of uncontrolled and unwise publicity. It must be borne in mind that it cannot be said of medicine or of the acts of physicians, as has been said of commercial articles, that any mention is a boost.

Several state medical societies, including particularly Massachusetts and Illinois, have initiated campaigns for undertaking publicity on a large scale. The methods for using these funds have not been, as yet, definitely outlined, and it will be interesting to watch the experiment as undertaken by these two societies. It is presumably the plan in Illinois to establish a central office from which publicity matter will be sent to the newspapers of the state, probably in the form of the usual mimeographed press sheet, such as is sent out by state and city health departments and other sources of health information.

At a recent meeting of the Chicago Medical Society, the managing editor of the Chicago *Journal*, Richard J. Finnegan, spoke on the doctor and the press. He said that within a period of three days twelve hundred pieces of publicity had reached the office of his paper and this excluded such matter as commercial, theatrical, movies, and welfare propositions. From this vast mass of publicity matter, the editor naturally has to make a choice. It may be taken for granted, therefore, that much of what is distributed represents a complete loss, for it is clear that it is impossible to use all, and that editors must select on the basis of general interest, human interest, news value, or similar considerations. Mr. Finnegan pointed out that there exists an absolute frenzy for publicity, and that editors "are crying for relief against a [this] flood of publicity." It was not his wish to increase the flood, but he did feel that there were many matters in which the medical profession and the newspaper were equally interested, and which should be properly exploited.

In his address, after listing the various organizations which sent forth publicity, he said:

> You will notice that there were no organizations of physicians there. The medical profession was silent. It had tonsillitis or throat paralysis that stilled its voice. Standing on its ancient plane of high ethics, it waited for the reporter to come to it. In twenty-two years in the newspaper field, I do not remember ever having seen any statement or other offering that could be regarded as publicity coming from the American Medical Association. Nor do I recall any from the Chicago Medical Society. Although your profession may be under fire, you do not even resort to self-defense, the first law of nature.

Now, if this is true, the fault lies, not with the medical organizations, but with Mr. Finnegan or with the newspaper which he serves. For many years the Council on Health and Public Instruction issued each week to some 2,500 newspapers a clip sheet of material published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, and any other news of importance which, for the benefit of the public, should be disseminated through the press. When *Hygeia* was established by the American Medical Association, a letter was addressed to every newspaper of any importance in the United States asking its editor whether or not he cared to receive regularly abstract material from this publication, and a copy of the periodical was sent to him so that he might be informed as to its character and contents. Hundreds of newspapers are availing themselves already of the *Hygeia* clip sheet service. The headquarters office of the American Medical Association is maintaining a close contact with such press services as the Associated Press, North American Newspaper Alliance and Science Service, which reach thousands of newspapers. Material on the annual session and on the progress of medicine has been regularly issued through such services, and the press clippings returned to the headquarters office have been the actual proof that the material was being used. Finally, newspapers have been informed that a telegram addressed to the headquarters office concerning any medical news items for publication would receive an immediate reply as to the facts, and whether or not publication was warranted. Many newspapers have availed themselves of this service, to the advantage of scientific medicine.

In this connection, we may quote perhaps from an article by Mr. M. W. Bingay, managing editor

of the Detroit *News*, who recently addressed the Wayne County Medical Society on the same subject:

> In this connection the North American Newspaper Alliance, comprising seventy or more of the leading newspapers of the United States, and of which the Detroit *News* is a member, has made arrangements through THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, not only to secure articles for our public, but to act in an advisory capacity for us.

The faults of medical publicity were also clearly outlined by Mr. Bingay:

> I think there has been in very recent years a great and steady change for the better on the part of the medical profession in taking the public into its confidence; a greater willingness to confide in the individual newspaper man and to work with him. I feel that this attitude on the part of the doctor is due in part to the rapidly improving standards of ethics among the better class newspapers of America. I frankly do not blame doctors—or anybody else for that matter—for refusing to risk their reputations and standing by talking to irresponsible newspaper reporters for yellow newspapers who will garble and twist whatever may be told them to make a sensational story with a complete disregard of the evil effects of this misinformation on the public mind. I freely admit the derelictions in this task of educating the public have not been all on the side of the doctor.
>
> Unfortunately, the average doctor does not have an understanding of newspapers and newspaper practice. He either fears all newspapers and refuses to consider the constructive possibilities, or he loves all newspapers whether they be sensational or sane, just so long as they play his name in big type. I think the honest newspaper man and the honest doctor agree on one thing, and that is in their holy hatred of these "publicity hounds." When you find one of these notoriety seeking doctors and get him into contact with an irresponsible and sensational newspaper man you have a combination that will do more than any other one thing to wreck all this effort to educate the public on the larger social values.

Medical organizations, before entering into campaigns for publicity, will require, not only the best advice and service of professional newspaper men, but controlled, experienced good judgment of well-informed and broad-minded physicians.

---

## THE ETIOLOGY OF PEMPHIGUS

Until recently the word pemphigus has referred to a conglomerate of diseases between which the only common bond of relationship seemed to be the occurrence of bullae. In fact, it is not long since every dermatosis displaying blebs or bullous lesions was likely to be classified as a form of pemphigus. Pusey states that Martius, for example, with scholastic zeal, enumerated ninety-seven varieties. At present the term is limited in its application to a few more clearly defined types of acute and chronic affections of the skin characterized "by the formation of one or several well defined, oval, rounded blebs, elevated or not above the level of the general surface, the lesions developing in successive cycles of eruption, and which may or may not be associated with general symptoms." Such, at least, is Ormsby's characterization of the malady.

Admittedly, little has been definitely ascertained about the etiology of pemphigus. There is no evidence of heredity as a causative factor. A few years ago it was more likely to be described as the outcome of vasomotor disturbance, a trophoneurosis, than in any other category, and a contagious character was denied to it. Organisms have been searched for, and as a rule the attempts to secure cultures have failed. Now and then some micro-organism has been isolated from cases of pemphigus only to meet the charge of being an accidental invader. The bacteriologic findings reported by Eberson [1] for a group of cases studied at the Mayo Clinic afford some justification for the belief that greater progress is in sight. Thus far, seven strains of an organism have been obtained from the blood of as many different patients. In one instance, the organism was isolated from the fluid of bullous lesions as well as from the blood. Positive blood cultures were found repeatedly in all of the cases investigated, and the organisms were morphologically and culturally the same. On further immunologic study they proved to be serologically identical, or related in their agglutination properties when tested with homologous and heterologous serums for cross-agglutinins. Serums from three patients, similarly tested, showed agglutinating power for several of the strains employed. A group of fourteen "controls" was composed of patients with dermatitis herpetiformis, psoriasis, oral and genital lesions, oral aphthous lesions and similar manifestations, but clinically free from pemphigus. Blood cultures were uniformly negative in all. A group of normal controls also proved negative.

The organism discovered and isolated by Eberson, which appears to be morphologically, culturally and immunologically the same in every case, has been named provisionally *Bacterium pemphigi*. It is gram-positive, anaerobic, nonmotile, ovoid or coccoid, resembling a streptobacillus in cetrain respects, is pathogenic for guinea-pigs and rabbits, and possesses definite toxic properties. Lesions have been produced experimentally with it in some instances; but Eberson frankly admits that the most desired link in the chain of Koch's postulates, that of experimental production of typical lesions, has not been observed regularly enough and in a manner sufficiently convincing to him. It is realized, however, that animals, especially of lower species, may not be adapted to the growth of a newly isolated organism; that certain phases, such as fixed virulence, cultural requirements and mode of inoculation, have yet to be worked out; and, finally, that there are a number of definite bacterial diseases of man which cannot be reproduced experimentally in animals. It must be admitted that a study of the literature of the subject discloses the description of alleged etiologic microorganisms as numerous as the different observers.

1. Eberson, Frederick: Studies on the Etiology of Pemphigus, I. Bacteriologic Findings in a Group of Cases of Pemphigus, Arch. Dermat. & Syph. **8**: 204 (Aug.) 1923.

Cocci have been prominent in these efforts, but of course they are common on the skin. Secondary invasion by unconcerned bacteria is always a possibility to be reckoned with under such circumstances. It is premature to claim a final solution of a puzzling problem. Eberson seems, however, to have made a promising beginning on the desired course.

## THE PINEAL BODY

Even the most enthusiastic endocrinologist must still admit that the secrets of the physiologic functions of the pineal body, or epiphysis cerebri, have not yet been clearly revealed. The earlier studies on the effects of extracts of the pineal substance were frankly disappointing. There was nothing essentially significant in the fact that a fall of blood pressure could be produced by intravenous injections; for depressor substances seem to be widely distributed, and the fact that a tissue yields potent substances to the chemist's manipulation by no means proves that normally they have a physiologic function or pathologic significance. The pineal body seems to reach its greatest development in man at about the seventh year. After this, and particularly after puberty, it undergoes a process of involution during which the glandular structure gradually disappears and its place is taken by fibrous tissue. This fact suggests, even if in an indirect way, that the pineal may have some relation to the developmental changes that end in the sexual maturity of the individual.

Pinealectomy has been practiced in an experimental way by several surgical investigators, notably by Dandy[1] and Horrax[2] in this country. The former, as did Biedl before him, secured no decisive effects on dogs; the latter has stated that extirpation of the pineal body in guinea-pigs causes an accelerated development of the generative organs of the male. It is said to be manifested before maturity by a relative increase in size and weight both of testes and of seminal vesicles over control animals.

Poultry lends itself particularly well to such studies, because the secondary sexual characters are exhibited strikingly in differences of form and plumage in the male. A recent study of pinealectomy by Izawa[3] on cocks at the Okayama Medical School in Japan has confirmed earlier similar work in demonstrating that pinealectomized young males of this species grow more rapidly than the controls, begin to crow prematurely, and show an earlier development of the comb and testes. Pinealectomized young hens also reveal an earlier development of the ovary and the fallopian tube. The other endocrine organs have not revealed any noteworthy changes incident to the operative intervention.

1. Dandy, W. E.: Extirpation of the Pineal Body, J. Exper. Med. **22**: 132, 1915.
2. Horrax, Gilbert: Studies on the Pineal Gland, Arch. Int. Med. **17**: 607 (May) 1916.
3. Izawa, Y.: A Contribution to the Physiology of the Pineal Body, Am. J. M. Sc. **166**: 185 (Aug.) 1923.

There are corroboratory evidences, though few in number, from human clinical experience which are somewhat in harmony with the assumption that the pineal body may exercise its function in repressing premature development of the organs of generation in the female as well as in the male. The subject deserves careful consideration at the hands of those who may have opportunities to make more extensive necropsy observations. Incidentally, the exhibition of retarding influences, if they prove to be such, in connection with important biologic activities, affords a further illustration of the little appreciated rôle of inhibition in physiology—a phenomenon to which Meltzer directed attention in a forceful way. Though it is rarely suspected, the organism has more than one brake to curb the speed of its physiologic machinery.

## ERYTHREMIA

Although less than a quarter of a century has elapsed since the malady known as erythremia, polycythemia rubra vera or Vasquez-Osler disease attained prominence as a medical entity, it can no longer be regarded as an extremely rare condition. The larger clinics of this country can now furnish the case histories of a considerable number of patients for whom the diagnosis has been clearly established. The unfavorable prognosis and course of the disease place a premium on accurate information that may become the basis of progress in the understanding of this baffling condition. Very early, the assumption of splenic tuberculosis as the foremost etiologic factor was negated, and grounds were uncovered for believing that erythremia is due to a primary hyperplasia of the erythroblastic bone marrow.

The increased activity of bone marrow is reflected in the peripheral blood, as Minot and Buckman[1] of Harvard have pointed out in an elaborate study of numerous cases, by increases of all three formed elements originating in it—erythrocytes, leukocytes and platelets. It is evidenced likewise by the appearance of abnormal and immature forms of all three elements, which may occur in greatly augmented numbers. The blood picture may then resemble that of myelogenous leukemia; in fact, the Harvard clinicians believe that the two diseases are intimately related and that both may be of neoplastic nature. They have ascertained at the Massachusetts General Hospital that the basal metabolism is often increased in erythremia, a result which, they believe, is affiliated with the augmented activity of blood formation, as it is in myelogenous leukemia.

Another series of contributions by Brown and Griffin[2] from the Mayo Clinic throws new light on

1. Minot, G. R., and Buckman, T. E.: Erythremia (Polycythemia Rubra Vera), Am. J. M. Sc. **166**: 469 (Oct.) 1923.
2. Brown, G. E., and Griffin, H. Z.: Studies of Capillaries and Blood Volume in Polycythemia Vera, Am. J. M. Sc. **166**: 489 (Oct.) 1923.

some of the vascular conditions in erythremia. They have observed a definite increase in the cell volume and the total blood volume—a fact that renders the nail-fold capillaries more readily visible by the applications of Lombard's method of study. According to Brown and Griffin, the accommodation of the blood vessels to the increased blood volume of polycythemia probably occurs first in the large veins and in the more vascular organs, especially the spleen. As the condition progresses, the smaller veins participate in the engorgement. This can be observed in the peripheral and the retinal veins. As the condition becomes more advanced, the capillaries of the skin and of the mucous membranes share in the engorgement, which is macroscopically more apparent in the latter tissue. Probably, as Brown and Griffin assert, many of the symptoms of polycythemia are not produced until the engorgement has progressed to the smallest vessels. The more serious vascular accidents occurring in the disease are late manifestations.

## *Current Comment*

### SOME EFFECTS OF THERAPEUTIC APPLICATION OF EXTERNAL HEAT

The scientific study of therapy at present is turning away, to some extent, from the rather exclusive consideration that drugs have received in the last few decades. Physical therapy and the application of various environment factors, such as sunlight and fresh air may involve, are receiving attention from new points of view. Their reputation as remedial agencies is being subjected to careful and critical scrutiny. Serious attempts are being made to disentangle fact from fancy in the allegations of climatotherapy in its varied aspects. It is time that this should be so. Long empiric experience indicates an undoubted modicum of truth in many of the reputed claims. It should be established on a firm basis that permits of rational application rather than guesswork and hit-or-miss schemes applied to humankind. Furthermore, not until the possibilities and limitations of physical therapy are clearly recognized can the faker be attacked with propriety and success. These comments have been elicited by contemplation of the recent researches at the Presbyterian Hospital in Philadelphia on the effects of external application of heat, a therapeutic measure that has long found favor in the management of certain types of diseases. The work of Pemberton [1] and his associates there has demonstrated that, as a result of external heat such as is represented by "electric bakes," the blood becomes more alkaline; there is a fall in its total content of carbon dioxid, and a slight rise in alkali reserve. These changes in the acid-base equilibrium of the blood cause compensatory changes in the urine and sweat. The loss of carbon dioxid by the body during the heat experiments is undoubtedly of prime importance as a factor that leads to a greater alkalinity of the blood. The increased blood flow during a bake presumably favors a more ready gas exchange between tissues and blood. The Philadelphia clinicians regard it as rather surprising that changes in the acid-base equilibrium of the blood of the magnitude here reported should follow what is considered mild exposure to heat. It suggests that indiscriminate and extreme employment of heat in therapy may lead to serious disturbances. Perhaps, as they add, there is here afforded some explanation for the baneful effects not infrequently experienced by patients at uncritical hands. Arthritic patients, in particular, have been the subjects of all sorts of thermal therapy. So far as the latest observations go, there is no indication that the response to heat by the arthritic patient is different from that of other persons, at least so far as it concerns acid-base equilibrium of the blood.

1. Cajori, F. A.: Crouter, C. Y., and Pemberton, Ralph: The Effect of Therapeutic Application of External Heat on the Acid-Base Equilibrium of the Body, J. Biol. Chem. **57**: 217 (Aug.) 1923.

### THE COMMON COLD

The etiologic agent in the production of the common cold has been singularly elusive. The disease—if it deserves this imposing designation—is a mild one in man. There are few, if any, significant constitutional reactions from it, and consequently it is not easy to ascertain whether the malady has been transmitted in animal experimentation. For this reason, attempts to infect animals with the common cold of man have borne little fruit of the nature of positive achievement. Efforts to transmit the possible incitant directly to human subjects, though few, have been somewhat more promising. The latest of such trials, conducted by Olitsky and McCartney [1] at the Rockefeller Institute for Medical Research, indicate that the incitant is a filtrable agent obtainable from the nasopharyngeal washings of patients during the very early hours of the onset of the symptoms. At least, with such filtrates the symptoms of common cold have been transmitted to a number of healthy persons. Transmission failed in cases in which the "colds" were caused by exposure to the elements, or chilling of the body, and not by definite contact with other cases of common colds. Evidently there are colds and colds; but it will be an unmixed blessing when the cause of any brand of these commonest sources of malaise can be captured, properly indicted, and then promptly executed.

1. Olitsky, P. K., and McCartney, J. E.: Studies on the Nasopharyngeal Secretions from Patients with Common Colds, J. Exper. Med. **38**: 427 (Oct.) 1923.

### RHYTHMIC MOVEMENTS AND TONUS IN THE INTESTINE

The intestine is the seat of a variety of muscular manifestations profoundly involved in our well-being and comfort, yet so complex that it has not been easy to relegate each to its determining agency. The peristaltic activities of the bowel are perhaps the most familiar. In addition to this type of movement, in the genesis of which the presence of food masses within the intestine plays a prominent part, there are rhythmic or pendular contractions that do not definitely drive the contents onward. A third feature is the varying state

of tonus of the enteric musculature. Proper intestinal function often depends on a harmonious interrelation of these different contractile activities. Hyperfunction or inhibition alike may result in a diversity of results: malaise, intense pain or other symptoms of distress. Efforts at rational therapy must be based on a precise knowledge of the innervation and irritability of the structures involved. Gross and Clark [1] of University College, London, have recently demonstrated that, although lack of oxygen does not affect the pendulum movements of the intestine for a long time, it does cause an immediate loss of tonus in the isolated intestine. The effect produced appears to be somewhat peculiar to this tissue. According to these English pharmacologists, there are in the isolated intestine two independent mechanisms, one regulating the pendulum movements and the other regulating the tonus. The latter mechanism is intensely sensitive to the action of epinephrin and pilocarpin, for these drugs alter tonus in concentrations far lower than those required to alter pendulum movements. Lack of oxygen paralyzes the tonus regulation mechanism rapidly, and hence renders the intestine insensitive to low concentrations of these drugs. It remains responsive to direct muscle stimulants, however. Gross and Clark explain the effects on the assumption that the tonus of the intestine is maintained by the nerve cells in Auerbach's plexus; for nerve cells are known to be very sensitive to oxygen lack. The rhythmic movements, on the other hand, appear to be myogenic in origin.

1. Gross, L., and Clark, A. J.: The Influence of Oxygen Supply on the Response of the Isolated Intestine to Drugs, J. Physiol. 57: 457 (Aug. 16) 1923.

# Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest: such as relate to society activities, new hospitals, education, public health, etc.)

## ALABAMA

**Society News.**—At a meeting of the Jefferson County Medical Society, Birmingham, October 22, Dr. Frederick C. Banting, Toronto, Canada, the guest of honor, spoke on his work on insulin. Dr. Seale Harris, Birmingham, presided, and Dr. William W. Harper, Selma, president of the Medical Society of the State of Alabama, gave an address.

## ARKANSAS

**Survey of Physicians' Credentials.**—Governor McRae, October 29, gave his approval to a movement initiated by the Pulaski County Medical Society to have surveyed all credentials and medical licenses issued in Arkansas within the last ten years, as a result of the recent expose of fake diplomas by the St. Louis *Star*.

## CALIFORNIA

**Osteopathic Board Declared Valid.**—In a decision recently handed down by the Supreme Court it was ruled that the initiative act creating the board of osteopathic examiners was valid and that the board has full control over its own special funds.

**Permits Refused to Chiropractors.**—On October 16, the state board of medical examiners refused to permit three graduates of the Western College of Chiropractors to take the state examination for a drugless healer license on the ground that they did not present a diploma from a school approved by the board. The board announced that until the Western College of Chiropractic changes its name, issues drugless therapy diplomas and is approved by the board, its graduates cannot be examined by the medical board. The school, to remedy the situation, has amended its by-laws so as to permit granting degrees in drugless therapy. Attorney General Webb rendered an opinion to the board of medical examiners holding that drugless healer licenses could be granted by the board to graduates of the chiropractic schools if such schools graduated the students as drugless practitioners rather than as chiropractors.

## COLORADO

**Western Surgical Association.**—The annual meeting of the Western Surgical Association will be held at Colorado Springs, December 6-8, with headquarters at the Antlers Hotel.

## CONNECTICUT

**Society News.**—Dr. William A. Pusey, Chicago, President-Elect of the American Medical Association, was the principal speaker at a meeting of the New Haven Medical Society, October 27. Following his address, Dr. Pusey urged that the society do all in its power to aid in exposing impostors practicing in Connecticut as a result of the Missouri "diploma mill."

**State Fires on Quacks.**—Governor Templeton, October 30, instructed state prosecuting officials to institute legal proceedings against 142 physicians licensed to practice medicine in Connecticut who claim to be graduates of the Kansas City College of Medicine and Surgery and the College of Physicians and Surgeons, St. Louis. The governor called to his assistance the attorney general, the county prosecuting attorney, the state board of health and the state constabulary. The "graduates" will be accused of obtaining licenses to practice medicine through fraud, and will be ordered to show cause why their licenses should not be revoked. The governor will ask the Connecticut Eclectic Medical Examining Board, which examined the 142 candidates and recommended that the state board of health issue licenses to them, to explain why it approved institutions as "eclectic" when the schools in question teach "regular" medicine (The Journal, November 10, pages 1614 and 1631). George E. Sutcliffe, Unionville, confessed to State's Attorney Alcorn that he bought credentials from the Missouri "diploma mill" through which he obtained a license to practice medicine in Connecticut.

## GEORGIA

**Clinic News.**—The Savannah Valley Clinic, Augusta, has assumed full control of the Margaret Wright Hospital. The clinic is now located in the hospital.——A new clinic for underdeveloped white children has been opened at Albany under the auspices of the Kiwanis Club, which rented the quarters and furnished the equipment. Albany physicians and dentists have agreed to give their services free to children whose parents cannot afford to pay.——Dr. Benjamin B. Steedly, Union, S. C., has been appointed director of the Steiner Memorial Cancer Clinic in Atlanta. This clinic is under construction on the Grady Hospital grounds. Mr. Steiner left $500,000 for this purpose.——Drs. Maury M. Stapler and Henry T. Harriss, Macon, have opened a home and school for the deaf in that city.

## ILLINOIS

**Personal.**—Dr. Harry C. Worthington, medical director of the Hillcrest Sanatorium, Quincy, since its establishment, has resigned.——Drs. Lyston D. Howe and Eley E. Perisho, both of Streator, were elected president and secretary-treasurer, respectively, of the La Salle County Medical Society at the annual meeting in Streator, October 30.

**State Tuberculosis Association.**—At the fourteenth annual meeting of the Illinois Tuberculosis Association at Springfield, October 30-31, Dr. James W. Pettit, Ottawa, was elected president to succeed Dr. George T. Palmer, Springfield, president of the association for the last ten years. Vice presidents elected were: Drs. Lewis C. Taylor, Springfield, Cecil M. Jack, Decatur, and Eva M. Wilson, Manhattan. Dr. Palmer was presented with a loving cup.

### Chicago

**Society News.**—A symposium on brain injuries was given by the Chicago Medical Society, November 14. Dr. William Sharpe, New York, spoke on brain injuries of the new-born. A dinner was given in honor of Dr. Sharpe at the Hamilton Club, preceding the meeting.

**New Hospital for Crippled Children.**—A drive for the purpose of collecting $500,000 for the erection of a new hospital for destitute and crippled children at Washington Boulevard and Paulina Street has been launched by the board of directors of the Home for Destitute Crippled Children. Three lots have been purchased for this purpose and several donations have already been received.

**Chicago Tuberculosis Institute.**—The institute is conducting a series of public health lectures, designed primarily for nurses in training, but of interest to physicians and the public. The lectures are repeated at three different places—north side, at the Grant Hospital; south side, at the Mercy Hospital; the west side at Congress Hall of the Illinois Training School. Some of the speakers are, Drs. Rachelle S. Yarros, Josephine E. Young, Orville W. McMichael and Ethan Allen Gray. Mr. T. B. Kidner, sanatorium expert for the National Tuberculosis Association, New York, addressed the institute, November 3.

## LOUISIANA

**Insulin Course at Touro.**—Touro Infirmary, New Orleans, announces a series of three-day courses for physicians on the use of insulin, with the aid of the John D. Rockefeller, Jr., Insulin Fund. The number to be admitted to each course will be limited only by the facilities. The first course, held November 5-7, was especially for physicians of the city; three other courses to be given this year will be open to members of the profession throughout the southern states, and will be free.

**The Carville Leprosarium.**—The $650,000 fund recently appropriated by Congress for the construction of additional buildings at Carville Leprosarium is sufficient only to erect seventeen cottages housing twelve lepers each, a dining room and kitchen building, and additional power plants, water supply and sewage disposal units. The infirmary needed for treatment of the blind and crippled must await further appropriations. There are 174 lepers at Carville, every bed being filled. The patients are from nearly every state in the Union. The new buildings authorized will add 204 beds which will be occupied at once. There is a waiting list of more than 100 patients. There are also other lepers in the United States whom it is desired to segregate as soon as facilities can be provided. One-fourth of the inmates at Carville are totally blind.

## MARYLAND

**Prosecution of Child Labor Law Violators.**—Warrants for the arrest of employers charged with violating the state child labor laws and the law limiting the working day of women to eight hours have been asked of police magistrates by the state department of labor and statistics, Dr. J. Knox Insley, commissioner. This department has been searching out violators of the labor laws for six months. The inspectors have discovered widespread disregard of the laws. The violations include employing children under the legal age of 14 years and between the ages of 14 and 16 years without permits; and having children and women work more than eight hours a day.

**Dean of Johns Hopkins Medical School.**—Dr. Lewis Hill Weed has been named by the trustees of the university as dean of the medical school. Dr. Weed succeeds Dr. J. Whitridge Williams, who resigned to devote his time to the Women's Clinic. Dr. Weed joined the faculty of the Johns Hopkins Medical School in 1914 as instructor in anatomy. He was appointed associate professor in anatomy in 1915 and was named professor of anatomy in 1919. During the war, Dr. Weed was a captain in the medical corps assigned to duty as military director of the Army Neuro-Surgical Laboratory at the medical school. Dr. Weed graduated from Yale University in 1908 and received his degree of doctor of medicine at the Johns Hopkins Hospital in 1912. He was then fellow-in-charge of the Laboratory of Surgical Research, Harvard Medical School in 1912-1913, and an Arthur Tracy Cabot fellow of the same school in 1913-1914. He will be the fourth dean of the Johns Hopkins Medical School since its opening thirty years ago, his predecessors being Drs. J. Whitney Williams, William H. Howell and William H. Welch.

**Personal.**—Dr. Charles V. Akin, Jr., has been appointed head of the child hygiene department, Hagerstown, to succeed Dr. Richard B. Norment, Jr., U. S. Public Health Service, who has been ordered to report for duty at the Marine Hospital, Stapleton, N. Y., of which he will assume charge.——Dr. Guy L. Hunner, associate professor of clinical gynecology, Johns Hopkins University Medical School, addressed the Will (Ill.) County Medical Society at Joliet, October 24.——Drs. Alvin P. Stauffer and William A. Gordon, both of Hagerstown, were elected president and secretary, respectively, of the Washington County Medical Society, October 4.——Dr. J. T. Geraghty, associate professor of clinical urology, Johns Hopkins University Medical School, Baltimore, will give an illustrated lecture on "The Value of Radium and Deep Roentgen Ray in the Treatment of Malignant Disease of the Bladder and Prostate" before the Summit County Medical Society, Akron, Ohio, November 20.——Dr. William H. Welch, dean of the School of Hygiene and Public Health of the Johns Hopkins University, was elected president of the National Committee for Mental Hygiene at the annual meeting held on November 8 in New York.

## MASSACHUSETTS

**Caduceus for Physicians Only.**—At the last annual meeting of the Massachusetts Medical Society it was voted that the committee on state and national legislation be directed to draft a bill and present it to the next legislature, which shall provide that no person other than a registered physician shall display the caduceus on an automobile in Massachusetts. Dr. James S. Stone moved, and it was voted, that the fellows of the state society adopt as the official emblem for use on their automobiles the caduceus, as supplied by the American Medical Association.

**The Thorndike Memorial.**—The Thorndike Memorial Laboratory of the Boston City Hospital was opened, November 15. Drs. Henry S. Rowen, Boston, William J. Mayo, Rochester, Minn., and Townsend W. Thorndike, Boston, and the mayor, gave addresses. The building was made possible by the bequest of the late Mr. George L. Thorndike, Boston. Selected groups of patients from the city hospital will be taken to the Thorndike laboratory for special investigation. The members of the staff at present are: Drs. Francis W. Peabody, director; Joseph T. Wearn, Thomas E. Buckman, Robert N. Nye, Henry Jackson, Jr., G. O. Brown, Percy B. Davidson, Elmer H. Heath, Donald S. King and Gulli Lindh Muller.

## MINNESOTA

**Hospital News.**—The Allen Memorial Hospital of Carlton College, Northfield, was formally opened in October.——The Maternity Hospital, Minneapolis, is offering to women a home-maker's course in hygiene.——The Danes of St. Paul and Minneapolis have organized for the purpose of building a home for the aged which will cost $28,000. A state-wide drive has been started and about $13,000 has already been contributed.

## MISSOURI

**Society News.**—Dr. Ray Lyman Wilbur, dean of Leland Stanford University Medical School, San Francisco, and President of the American Medical Association, was the guest of honor at the fall banquet of the Jackson County Medical Society, Kansas City, November 13.

**Funds Available to Chase Quacks.**—In an opinion handed down, October 19, by the attorney general it was stated that the state board of health may use its $36,000 contingent fund to employ experts to survey medical colleges and physicians' licenses to ascertain if unqualified persons are practicing medicine in Missouri, following the recent "diploma mill" exposure. Dr. North, president of the state board of health, stated that it is planned to investigate the status of each of the 5,827 physicians in the state.

## NEVADA

**County Hospital Bill Passed.**—The state legislature has passed a bill to enable counties to establish and maintain public hospitals, levy a tax and issue bonds therefor, elect hospital trustees, maintain a training school for nurses, and provide suitable means for the care of disabled persons (Ch. 172, Laws 1923).

## NEW HAMPSHIRE

**Claremont Hospital.**—With the bequest of George N. Stowell of $90,000 and $77,000 raised by subscription, a hospital was built in Claremont. It was opened to the public, October 31. A feature is the Veterans' Memorial Wing dedicated to the memory of Claremont's citizens who fought in the World War.

## NEW JERSEY

**Hospital Opened.**—The new building of the Hackensack Hospital, which will accommodate 160 patients, was opened for public inspection, September 15. It is six stories high and cost $900,000. This gives the hospital a total capacity of 285 beds.

**County Society Notes.**—Prof. Edward J. G. Beardsley, Jefferson Medical College of Philadelphia, delivered the principal address at the annual meeting of the Gloucester County Medical Society, recently.——At the one hundred and eighth annual meeting of the Essex County Medical Society, October 2, at Newark, Dr. Mefford Runyon was elected president. ——Drs. Charles B. P. Kelley and William L. Yeaton, Jr., were elected president and secretary, respectively, of the Hudson County Medical Society at the annual session, October 2, at Jersey City.——The annual meeting of the Passaic County Medical Society was held in Paterson, October 11. Dr. John N. Ryan, Passaic, was elected president and Dr. Louis G. Shapiro, Paterson, secretary.

## NEW YORK

**Poliomyelitis Serum for Distribution.**—The state health department announces that a limited quantity of human immune serum has been prepared by the department for distribution to physicians making request by telephone to the Division of Laboratories and Research, Albany. It should be used only in cases in which it has been possible to make a reasonably certain diagnosis of poliomyelitis in the preparalytic stage. Instructions for its use are sent with the serum.

**Society Entertains Foreign Delegates.**—The Albany County Medical Society gave a dinner, October 29, in honor of the state health commissioner, Dr. Matthias Nicoll, Jr., and of seven members of the Third Interchange of Health Officers arranged by the public health division of the League of Nations. Dr. Nelson K. Fromm, president of the local society, presided. The party included, Dr. Hushoff Pol, The Hague; Dr. Batka, Poland; Dr. Stoneski, Russia; Dr. Orvananes, Mexico; Dr. Marzeeff, Ukraine; Dr. Cora Mayers, Chile, and Dr. Sannemann, Germany.

**Syracuse Health Surveys.**—An industrial health survey under the direction of the Milbank Fund, was considered November 5, at Syracuse by the chamber of commerce and the manufacturers' association. Dr. Wade Wright of the department of industrial hygiene at the Medical School of Harvard University, Boston, will direct the survey which will cover all branches of industry. Dr. Haven Emerson of Columbia University, New York City, November 8, outlined a proposed survey of the city concerned solely with social hygiene. Dr. Walter H. Brown, National Child Health Association, will later confer with local representatives concerning a child hygiene survey.

**Journal May Be Weekly During Legislative Session.**—It has been officially announced that the *New York State Medical Journal*, the official organ of the Medical Society of the State of New York, will appear as a weekly or bimonthly publication, as events may dictate, during the months of January, February and March, and possibly April. By this course it will be possible to keep physicians informed on legislative matters of interest to the profession during the period when the legislature is in session. The plans do not, however, call for weekly issues of the journal during the late spring and summer months. Dr. Nathan B. Van Etten will continue to serve as editor.

### New York City

**Anniversary Lecture.**—The anniversary discourse of the New York Academy of Medicine was given, November 1, by Dr. William S. Thayer, Johns Hopkins University Medical School, Baltimore, his subject being "Studies on Acute Bacterial Endocarditis." The program was arranged in cooperation with the Association for the Prevention and Relief of Heart Disease.

**Quacks and the Press.**—The committee on civic policy of the Medical Society of the County of New York announces that it will welcome and appreciate any information from members of the medical profession regarding definite and specific cases of exploitation on the part of medical quacks advertising in the lay press. All information will be treated as strictly confidential.

**National Committee for Mental Hygiene.**—The annual meeting of the National Committee for Mental Hygiene was held at the Hotel Pennsylvania, November 7. Plans for the first international congress of mental hygiene were discussed. Dr. Walter B. James, New York, president for the last five years, presided. The following officers were elected: president, Dr. William H. Welch, Baltimore; vice presidents, Dr. Charles W. Eliot, Cambridge, Mass., and Dr. Bernard Sachs, New York; secretary, Clifford W. Beers; treasurer, Otto T. Bannard.

**Hospital News.**—The Williamsburg Hospital, Brooklyn, has closed its doors and will no longer operate as a hospital.—— The staff conferences at the Memorial Hospital, resumed, September 27, are held Thursday mornings at 10 o'clock.—— Alterations will be made to St. Mary's Free Hospital for Children, at a cost of $75,000.——The board of directors of the Wyckhoff Heights Hospital Society announces that the campaign for $350,000 for an additional wing to the present building has been renewed. The addition will be a five story wing erected on the vacant plot on St. Nicholas Avenue and Stockholm Street.——The property at 371 Central Park West, northwest corner of Ninety-Seventh Street, built for and occupied by the Pasteur Institute, has been sold. On expiration of the present lease, the building will be remodeled for use as a private sanatorium for surgical patients.——Plans have been completed for the new $90,000 hospital at Brooklyn to be known as the Bensonhurst Maternity Hospital.——A new seventy-bed hospital, to be known as Hunt's Point Hospital, will be erected in New York City at an estimated cost of $250,000.——The Jamaica Hospital campaign committee, which is conducting the drive for $250,000 for the new Jamaica Hospital, announces that the Jamaica Lodge of Masons has purchased a six bed ward in the new hospital for $11,500.——A department, where a 300,000 volt roentgen-ray apparatus will be installed, exclusively for the study and treatment of cancer, will be opened at St. Mary's Hospital, Brooklyn, it has been announced.

## NORTH CAROLINA

**Tuberculosis Conference.**—The third annual meeting of the North Carolina Conference on Tuberculosis was held in Durham, October 30-31. Dr. J. Vance McGougan, Fayetteville, president of the state medical society, presided at the opening session, October 30. Dr. Linsley R. Williams, New York City, managing director of the National Tuberculosis Association, gave an address.

## OHIO

**Health Commissioners' Meeting.**—The fourth annual conference of county and city health commissioners of the Ohio Health Department will be held in Columbus, November 19. Surg. Gen. Hugh S. Cumming, Washington, D. C., Dr. Allen W. Freeman, Johns Hopkins University, Baltimore; Dr. Joseph S. Rardin, president of the Ohio State Medical Association, and Dr. Millard F. Hussey, Sidney, will speak.

**Personal.**—Dr. Frank M. Sayre was elected health commissioner of Canton to succeed Dr. William K. Murray, resigned, October 5.——Dr. Arthur C. Bauer, Cincinnati, former coroner of Hamilton County, has been appointed medical director of the Miwogee Springs Hotel, Milan, Ind.——Dr. James G. Blower, Akron, won the cup presented by President C. T. Hill at the annual golf tournament of the Summit County Medical Society, at Akron, October 31.——Dr. Charles Armstrong, U. S. Public Health Service, formerly of Alliance, has been appointed one of a group of American physicians to study conditions abroad under the reciprocal exchange recently approved at the health conference of the League of Nations. Dr. Armstrong, who sailed in September, will maintain headquarters at Brussels and Copenhagen.——Dr. George W. Crile, Cleveland, has been decorated with the cross of the Legion of Honor by the French government for services with the Lakeside Hospital Unit during the World War. The ceremony took place at Lakeside Hospital, October 8.——James Sprigg Wilson, colonel, U. S. Army, retired, has been appointed professor in the department of public health and sanitation, Ohio State University College of Medicine, Columbus.——Dr. George W. Rhonehouse, Maumee, has been elected president of the Lucas County Board of Health to succeed Dr. Fred F. Devore, Whitehouse, who has been appointed county health commissioner.

## OREGON

**Hospital Opened.**—The new Salem Hospital at Salem was formally opened to the public November 1. Several rooms have been equipped as memorials. A nurses' training school will operate in connection with the institution.

**Personal.**—Dr. Dick R. Ross, until recently connected with the state hospital, Salem, has been appointed school physician to succeed Dr. James O. Matthis, resigned.——Dr. Otto L.

Asher of the Northern State Hospital, Sedro-Woolley, Wash., has been added to the staff of the Eastern Oregon State Hospital, Pendleton.——Dr. John A. Burkett, Coquille, has been appointed health officer for Coos County.——Dr. Earl Smith, coroner of Multnomah County, has been reelected president of the state coroners' association.

## PENNSYLVANIA

**Cambria County Society Banquet.**—The annual banquet of the Cambria County Medical Society was held at Johnstown, November 8. Dr. Charles H. Miner, state secretary of health, was the principal speaker and guest of honor.

**Tuberculosis Day.**—The governor, Gifford Pinchot, has designated December 2 as Tuberculosis Day to be observed in the churches, and December 7 as Tuberculosis Day to be observed in the schools, and has approved the sale of Christmas Seals for the period of November 30 to December 25.

**Conferences on Pneumonia.**—The health director of Pittsburgh has arranged for conferences with scientists and medical authorities in regard to pneumonia in Pittsburgh. These conferences will be preliminary to an investigation to determine if there is anything peculiar in local conditions to which the high pneumonia rate can be attributed.

**Personal.**—Dr. William S. Bertolet, Reading, has been appointed medical director of the Reading Hospital.——Dr. Lewis H. Taylor, Wilkesbarre, was recently appointed a member of the State Health Advisory Board.——Drs. Morris J. Van Horn, Charles W. Tressler and Peter H. Jamison have been made deputy health officers of Luzerne County.——Dr. John A. Fell has resigned from the Doylestown Board of Health following twenty-nine years of service.

**License Bureau News.**—A notice from the department of public instruction of the Bureau of Medical Education and Licensure, states that the licenses of Drs. Albert C. Speer, Pittsburgh, and Simeon C. Truby, Uniontown, which had been suspended, were restored at a meeting of the board, October 18.——The licenses to practice medicine of Drs. Walter C. Brady, Allentown, and James B. Graff, Portage, have been suspended by the board for violation of the Harrison Narcotic Law.——The next state board examination in Pennsylvania will be held in Philadelphia, Jan. 29 to Feb. 2, 1924.

### Philadelphia

**Reception to Visiting Health Officers.**—The mayor, Hampton Moore, and the director of the health department, Dr. Blair Spencer, were hosts at a reception at the Ritz-Carlton Hotel, November 16, in honor of the foreign health officers who comprise the Third Interchange of Health Officers arranged by the League of Nations.

**Health Information Bureau Opened.**—The Philadelphia Health Council and Tuberculosis Committee has established an information bureau on South Eighteenth Street for the benefit of those who face problems of sickness. This new service directs inquirers to the proper place or organization which will attend to their needs and makes the necessary contacts.

**Jewish Fellowship for Woman's College.**—Following the founding of an Italian fellowship (THE JOURNAL, November 3, p. 1531), the Jewish women's organizations of the city have placed at the disposal of the Woman's Medical College of Pennsylvania, Philadelphia, $5,000 for a scholarship, which will be known as the Esther Baum Medical Scholarship, in memory of the late Miss Baum. It will be awarded annually to a Jewish woman student.

**Loving Cup for Retiring Chief.**—Dr. Edward E. Montgomery, who has just retired from the staff of St. Joseph's Hospital, where he served thirty-two years as a member and twenty-four years as president of the staff, was the guest of honor at an entertainment at the hospital, November 8, prior to his departure for South America the following day. A silver loving cup was presented to him by the members of the staff. Dr. George Morley Marshall has been made president of the staff to succeed Dr. Montgomery.

## PHILIPPINE ISLANDS

**Vaccination.**—According to reports, ten vaccinating parties are now working under the direction of the Philippine Islands Health Service, to complete a systematic campaign to vaccinate all of the inhabitants. These parties are working in the provinces of Oriental Negros, Batangas, Illocos Sur, Bataan, Samar, Albany, Zamboanga, Surigao, Capiz and Zambales. In Manila seven persons are vaccinating children from 1 month to 1 year of age, and seven others are making a house to house revaccination campaign. It is said that among 419,210 vaccinations made, 153,503 were positive.

## SOUTH CAROLINA

**Chiropractor Jailed.**—According to reports, Frank Coon, a chiropractor of Greenville, was recently sentenced to ninety days in jail for practicing medicine without a license. A petition for his pardon was refused by the governor.

## TENNESSEE

**Public Health News.**—Plans for the improvement of public health in the state were considered at a meeting of the health and sanitation committee of the Nashville Chamber of Commerce recently. It was agreed that an effort would be made to have legislation enacted providing for the establishment of more county health units, and rural sanitation agencies and the eradication of epidemic and venereal disease on a state-wide scale. Tennessee, during the fiscal year will receive about $60,000 from the government and other sources for public health work.

## VIRGINIA

**Society Library.**—Members of the Medical Society of Virginia have subscribed $10,000 to establish a medical library at the headquarters of the society on West Grace Street, Richmond.

## WYOMING

**Full-Time Health Department.**—A full-time health department will be established in Natrona County to be operated under the supervision of the Rockefeller Foundation, in cooperation with the city, county and school authorities. A laboratory will be installed in the city hall, Casper, where offices of the department will be maintained. Dr. Ralph J. Malott, Williamson, W. Va., will be in charge of the work.

## CANADA

**Society News.**—The Western Ontario Academy of Medicine held a joint session with the London and Elgin Dental societies, October 31, for a discussion of "Focal Infections." Weston A. Price, D.D.S., of the National Bureau of Dental Research, Cleveland, stated that "there is no general clear conviction in the minds of the members of the medical or dental profession as to what constitutes a potentially dangerous dental infection." Dr. Frederick G. Banting spoke on the subject as affected by certain problems in diabetes.

## GENERAL

**Professor Kammerer Coming to the United States.**—Prof. Paul Kammerer, docent in the Biologic Research Institute of Vienna, is expected in this country very shortly. He has been lecturing before the Linnean Society of London, and expects to give a similar course of lectures in different parts of this country.

**World War Pensioners.**—The International Labor Bureau announced that approximately 10,000,000 persons are drawing pensions because of casualties in the World War. Germany has 1,537,000 pensioned men, France 1,500,000, Great Britain 1,170,000, Italy 800,000, Russia 775,000, Poland 320,000, Czechoslovakia 236,000, Austria 164,000, Jugoslavia 164,000, United States 157,000, Roumania 100,000, Australia 76,000, Belgium 50,000, Canada 45,000, New Zealand 20,000. Statistics are lacking for Turkey, Bulgaria, Portugal, Hungary, Japan and the Baltic States.

**Medical Literature for German and Austrian Physicians.**—The lack of modern medical literature, particularly periodicals, has been an especial difficulty in the progress of medical science in the German speaking countries. The great depreciation of German currency has made it impossible for German physicians and medical schools to purchase foreign material, sorely needed for pursuing research and investigation. Any physician wishing to contribute periodicals or books published within the last eight years may send them to A. Kroch, 22 North Michigan Avenue, Chicago, who will act as agent in forwarding the material to the Central Committee in Germany.

**Iodin in Public Water Supply.** — Rochester, N. Y., is attempting to solve its goiter problem by putting iodin in the public water supply. Water from Hemlock Lake, which flows into Rush reservoir about ten miles south of Rochester, has a normal iodin content of about 1 to 2 parts per billion. This is increased to about 50 parts per billion by the addi-

tion of sodium iodid. The amount of water entering the reservoir is determined at the Gate House by means of a "thin edged weir" or dam. The city was using when iodin was added about 25 million gallons of water a day, to which 16.6 pounds of sodium iodid was added daily for three weeks. The salt was simply placed in a cotton bag and held in the water above the dam until dissolved, which required about three or four minutes. The cost is estimated at about 1 cent per person per year, using the iodin salt six weeks in the year. A resurvey will be made next year to determine the results obtained.

**American Aid for German Medical Science.**—Dr. Ludvig Hektoen, Chicago, is chairman of a large committee which has made an appeal to American physicians to come to the aid of practitioners, research workers and medical students of Germany who face a winter of great distress and privation. As alumni of America's universities and professional schools, the committee says, we cannot afford to stand idly by while scientific and medical Germany disappears. We have shared in the benefit of antitoxins, of chemotherapy, of the roentgen ray. We shall not want the future to record that we were indifferent when the science of a Ludwig, a Virchow, a Helmholtz, a Koch or a Fischer was in dire need. Now is the time of greatest need. The old men of the profession in Germany are in most instances absolute paupers, their life's accumulation not sufficing to buy a slice of bread. Every effort will be made to safeguard the transmission of contributions to this fund, which if expedient, will be made through American government channels. Make your check payable to "American Aid for German Medical Science," and mail to Dr. Hektoen at 637 South Wood Street, Chicago.

**Tri-State Association Meeting.**—At the annual meeting of the Tri-State District Medical Association, Des Moines, Iowa, November 1, Dr. Addison C. Page, Des Moines, was chosen president-elect; Dr. Clifford U. Collins, Peoria, Ill., president, to succeed Dr. Horace M. Brown, Milwaukee, and Drs. William B. Peck and J. Sheldon Clark, both of Freeport, Ill., managing director and assistant managing director, respectively. Indiana and Missouri were added to the present official territory. The following representatives were present: University of Toronto, Canada, Sir Robert Falconer, president; Royal College of Surgeons, Dublin, Ireland; Sir William I. De Courcy Wheeler, president; McGill University, Montreal, Canada, Dr. Charles F. Martin, dean of the medical school. The medical schools of Harvard, Yale, Columbia, Pennsylvania, Western Reserve, Ohio; Kentucky, Washington University, St. Louis; Michigan, Wisconsin, Illinois, Iowa, Minnesota, Colorado and California were represented. Dr. Ray Lyman Wilbur, San Francisco, President of the American Medical Association, gave an address. Dr. Charles Mayo, Rochester, Minn., acted as president of clinics. It was announced that plans had been completed to establish a $100,000 foundation to conduct clinics and lectures for the benefit of physicians in rural districts. This fund will be secured by contributions from members of the tri-state association.

**Hot Springs Investigation.**—At a conference of the division of medical sciences of the National Research Council in Washington, D. C., Oct. 27, 1923, at which the following were present: Drs. Thomas S. Bratton (Hot Springs), William Duane (Boston), David L. Edsall (Boston), Frederick P. Gay (New York), Henry H. Hazen (Washington), James B. Herrick (Chicago), Arthur D. Hirschfelder (Minneapolis), William H. Howell (Baltimore), Reid Hunt (Boston), Samuel C. Lind (Washington), George W. McCoy (Washington), Joseph H. Pratt (Boston), William S. Thayer (Baltimore), Victor C. Vaughan (Old Mission, Mich.), Oliver C. Wenger (St. Louis), William T. Wootton (Hot Springs), Mr. B. L. Vipond (Washington), and Dr. C. M. Jackson (chairman, division of medical sciences, National Research Council), the following resolution was adopted:

WHEREAS, The Secretary of the Interior has requested the division of medical sciences of the National Research Council to consider the desirability and feasibility of an investigation to determine the therapeutic value of the waters of Hot Springs, Ark.; and

WHEREAS, The National Research Council has called a conference to advise upon this question; be it

*Resolved*, That, after due deliberation, it is the opinion of the conference:

1. That a thorough investigation, both experimental and clinical, of the physiological action and therapeutic value of the Hot Springs waters is highly desirable for the guidance of the Government, for the information of the medical profession and for the protection of the public in the use of these and similar mineral waters.

2. That such an investigation, although requiring much time, skill and forethought, should be quite feasible with the clinical and laboratory facilities already available or procurable by the Government, in cooperation with the National Research Council and other agencies interested.

3. That it be further recommended as the sense of the conference that a small committee, not to exceed five, appointed by the chair, be authorized to outline the details of any proposed investigation in consultation with representatives of the Department of the Interior.

In accordance with this resolution, Drs. David L. Edsall, William H. Howell, Reid Hunt, Victor C. Vaughan and C. M. Jackson (chairman, division of medical sciences, National Research Council, as member ex officio) were appointed on the committee.

## LATIN AMERICA

**Spanish Urologic Society.**—The sixth congress of the Asociación Española de Urología was recently held at Madrid, with Dr. Barragan in the chair. The society has 120 members and nineteen foreign associates. The election at the close of the meeting resulted in the choice of Drs. L. de la Peña for president; P. Cifuentes, vice president; I. Covisa, secretary; F. Miraved, treasurer; recording secretary, Luque, and S. Pascual and Picatoste, directors. The founder of the society, Dr. Luis González Bravo was elected perpetual honorary president.

**Conference on Leprosy.**—Physicians and sanitarians recently met to discuss the alarming spread of leprosy in South America. It was decided to ask the United States for help and a cablegram was sent to request the immediate shipment of medicine to treat this disease. The establishment of a leper colony on an island in the Parana River was recommended. The only Argentine leprosarium is at Buenos Aires where there are about 200 cases. It was stated that there are at least 5,000 lepers in Buenos Aires. Medical authorities believe that a comprehensive plan of isolation should be adopted in Argentina and Brazil, where whole villages are known to be leprous.

**Personal.**—Dr. José Ducci, professor and secretary of the faculty of medicine at the University of Chile, is visiting in New York. Dr. Ducci is director of the roentgen-ray laboratory of the Clinical Hospital, a member of the Chilean Social Hygiene League and, while in the United States, attaché of the Chilean embassy.——Dr. G. Bosch Arana, professor of operative medicine at the University of Buenos Aires, of the editorial staff of the *Prensa Médica Argentina* has left for Europe on an official mission to investigate methods of amputation and the construction of artificial limbs.——A party of three professors and twelve students from the University of Genoa recently arrived in Buenos Aires to study the educational institutions of Argentina.

## FOREIGN

**Plague in Morocco.**—Forty deaths from plague were reported, November 10, from Larache, Morocco. No details were given.

**Surgeons Elect.**—At the annual meeting of the Royal College of Surgeons of Edinburgh, Sir Harold J. Stiles was elected president; Sir David Wallace, vice president, and Alexander Miles, secretary-treasurer, for the ensuing year.

**Gift for Otology.**—Geoffrey Duveen, of Duveen Bros. of London, Paris and New York, has donated $50,000 to the University of London, England, to found a chair of otology in memory of his father. The donor intends to allocate a further $75,000 to the University College Hospital to provide modern treatment for the deaf.

**Memorials to Physicians.**—A bust of Ribbert was recently installed in the Pathologic Institute at Bonn.——A subscription list has been opened for a memorial tablet with portrait of Professor Josué, to be placed in his service at the Pitié Hospital at Paris. A replica of the tablet will be given to every subscriber of at least 100 francs.

**Arsphenamin and General Paralysis.**—The topic for the competitive university prize offered by the University of Berlin for the current academic year is: "Is there any evidence that the number of cases of general paralysis is declining, and if so, is there evidence to connect this with arsphenamin treatment in early syphilis?"

**The German Council on Chemistry and Pharmacy.**—Our German exchanges bring the notice that the *Auskunftei*, the information service which the Council has maintained for several years—Professor Penzoldt of Erlangen and Professor Holste of Jena donating their services—will have to be discontinued, owing to lack of funds.

**The Forlanini Foundation.**—Funds have been collected by popular subscription and the Marelli legacy to endow a foundation in memory of Carlo Forlanini, to promote research on pulmonary tuberculosis and its treatment. The board in charge of the endowment consists of five members of the

medical faculty at Milan and at Pavia, where Forlanini inaugurated his artificial pneumothorax treatment of tuberculosis.

**Far Eastern Association of Tropical Medicine.**—The fifth congress of the association was held in Malaya, Singapore, September 3-17. Hon. Dr. Albert L. Hoops, principal medical officer of the Straits Settlements, was installed as president. Fifteen countries were represented. There was a week of scientific meetings in Singapore and a week spent in touring the Federated Malay States and Penang. Surg. Howard F. Smith, U. S. Public Health Service, Manila, P. I., and Dr. Wilbur A. Sawyer, an official from the International Health Board, represented the United States. The sixth congress will be held in Tokyo in October, 1925, under the presidency of Dr. Shibasaburo Kitazato. A recommendation was made that each of the governments interested, and the Rockefeller Foundation, be invited to name a member of a committee to report at the next congress on the control of beriberi. It was resolved to ask the health committee of the League of Nations to arrange for the temporary interchange of sanitary personnel in countries of the Far East and to provide for a course of instruction for health officers to be given in Tokyo following the meeting of the sixth congress.

**Personal.**—Professor Strandberg of Copenhagen will deliver a lecture at the Royal Society of Medicine, London, England, December 3, on the results of treatment of tuberculosis of the nose and throat in the Finsen Light Institute at Copenhagen.——Dr. William F. Shanks has been appointed professor of physiology at the University of Leeds, England. —Prof. Alexis Thomson has resigned after fifteen years' service from the chair of systematic surgery at the University of Edinburgh, Scotland, on account of ill health.——Sir William Leishman, director general of the medical services, delivered the inaugural address of the one hundred and eighty-seventh session of the Royal Medical Society of Edinburgh, October 19.——Dr. Fodor, assistant to Abderhalden, has been asked to go to Palestine to superintend the foundation and take charge of an institute for physiologic chemistry. —Dr. Köppe, professor of ophthalmology at Halle, has been lecturing in Spain and Italy on the "Microscopy of the Living Eye."——A bronze bust of Prof. W. Körte was unveiled recently in the surgical ward of the Urban Hospital at Berlin, the occasion being his seventieth birthday.——On the recent eightieth birthday of Dr. F. Ahlfeld, professor emeritus of gynecology and obstetrics at Marburg, greetings were brought from far and near, recalling that he introduced among other things the use of alcohol to disinfect the hands. —The French government has made Drs. Voncken and R. Mathys of Brussels and Prof. H. Fredericq of the University of Liége, chevaliers of the Legion of Honor.——Dr. A. Lipschütz, professor of physiology at Dorpat, has been elected to honorary membership in the Sociedad Mexicana de Biología.——The Physikalisch-Medizinische Society of Würzburg has appointed Prof. I. Ochoterena, secretary of the Sociedad Mexicana de Biología, foreign corresponding member. It was to this society that Roentgen presented his first report on roentgen rays.——A medal was presented to Prof. C. Walther at a gathering of his pupils and friends at the Pitié Hospital at Paris.——The Leonard prizes for distinguished work in colloid chemistry were recently awarded by the German Kolloidgesellschaft to R. Zsigmondy, professor of inorganic chemistry at Göttingen, for his discovery of the ultramicroscope, and to Dr. W. Pauli, professor of internal medicine at Vienna, for research on proteins.

### Deaths in Other Countries

Dr. W. E. **Ashley Cummins**, professor of medicine at University College, Cork; president of the Cork Medical and Surgical Association.——Dr. **Schattenfroh**, professor of hygiene at the University of Vienna, director of the Hygienic Institute.——Dr. **Delfino Pacheco**, Buenos Aires, president of the group of medicolegal experts, and member of the national house of deputies, aged 64.——Dr. **B. Moreau**, professor of pharmacology at the University of Lyons.——Dr. **Manuel A. Velásquez**, professor of biologic chemistry and secretary of the medical school at Lima, Peru, on the editorial staff of the *Crónica Médica*.——Dr. **Valentin Carulla**, rector of the University of Barcelona, long professor of materia medica and chief of the Clinical Hospital.——Dr. **T. Muñoz Sedeño**, formerly professor of anatomy at the University of Madrid, aged 85.——Dr. **L. M. Caty**, professor of social hygiene at the University of Brussels, member of the house of deputies. —Dr. **H. Swiecicki**, rector of the University of Posen, professor of obstetrics, aged 69.——Dr. **A. M. Bergman**, chief of the state veterinary bacteriologic institute at Stockholm.

# *Foreign Letters*

## PARIS

*(From Our Regular Correspondent)*

Oct. 26, 1923.

### Seventeenth French Congress of Medicine

The Seventeenth French Congress of Medicine was held at Bordeaux, September 27-29, under the chairmanship of Dr. Arnozan, formerly professor of clinical medicine at the Faculté de médecine of Bordeaux. Three subjects were on the program: (1) the remote results of malaria; (2) treatment of meningococcic infections, and (3) relations between the sympathetic nervous system and the endocrine glands.

#### THE REMOTE RESULTS OF MALARIA

Dr. Le Dantec, professor of tropical diseases at the Faculté de médecine of Bordeaux, dealt at length with the remote effects of malaria on the circulatory apparatus, and the influence of malaria on the mother and child. The existence of malarial aortitis should not be questioned. Potain long ago showed by percussion and auscultation that the aorta dilates during attacks of malarial fever, and retracts under the influence of quinin. Today, thanks to roentgenoscopy, this dilatation can be seen at the time of the onset of the malarial fever. The dilatation generally involves the portion of the aorta above the valves. As the result of successive attacks, the aorta finally undergoes definite changes, and becomes distended. The peripheral arteries may also be affected by malaria. Dry gangrene from obliteration of arteries is not rare in some parts of the body, especially in the extremities, the face or the genital organs. In a case of this kind observed by Le Dantec, the coagulum in the obliterated artery was found to contain hematozoa in large numbers.

In women, malaria exerts a harmful influence on fecundation, pregnancy and childbirth. In malarial districts there are more sterile women than in more healthful climates. Pregnancy may not only precipitate but also may modify an attack of malaria. Pregnancy, when associated with malaria, often ends in abortion or premature labor. The period following childbirth is always marked by the return of malaria. The fever usually appears about the third day after childbirth; malarial attacks can be distinguished from puerperal fever by the fact that the former come on more commonly in the morning. In case of doubt, quinin should be administered, as it has also a favorable influence on puerperal septicemia. Children, born at term, of a malarial mother, are poorly developed and have a tendency to rickets. When the mother is suffering from malarial cachexia, the mortality among the new-born is 75 per cent.

Sequelae of malaria with definite lesions that are not influenced by quinin, do not respond to any specific treatment. This is not true of lesions that are still active, such as are encountered in colonial officials, planters and in the native population. Here specific treatment is strongly indicated and comprises preventive and curative cinchonization. The former consists in the daily administration of from 0.2 to 0.3 gm. of quinin sulphate or hydrochlorid. This may be continued for many years without inconvenience to the digestive tract or to the renal passages. In recent malaria, purely schizogenous, a radical cure may be effected by intensive treatment extending over several weeks. On the other hand, in cases of longer duration, gametogenic malaria, the treatment should be continued for two months or longer. As long as the tongue remains coated, Le Dantec has recourse to intramuscular injections. When gastric disturbance has disappeared, quinin may be administered perorally, which is the only practical route for protracted treatment.

Dr. Hesnard, professor at the school of naval medicine of Bordeaux, discussed the remote effects of malaria from the neuropsychiatric point of view. Persistent nervous disturbances of malaria are encountered in subjects who have suffered rather severe attacks. However, the gravity of the disturbances is not always proportional to the severity of the infection that gave rise to them. For instance, a grave psychosis may follow a mild case of malaria, in which only parasites of a benign type are present. As remote sequels of a psychiatric character, one observes (1) tardy mental complications in subjects with frank predisposition; (2) mental sequels (arrest of mental development: malarial infantilism, mental debility, etc.); (3) chronic insanities, continuous or intermittent, precipitated by the malaria in subjects constitutionally predisposed; more particularly, attacks of manic-depressive insanity and certain types of catatonic dementia praecox.

These papers gave rise to an interesting discussion, during which Professor Sabrazès of Bordeaux reported four cases of encephalomeningeal sequels of malaria. He emphasized the importance of laboratory researches; more particularly, the cytologic and chemical examination of the cerebrospinal fluid, to determine the nature of nervous accidents of malarial origin. Dr. Porot of Algiers stated that in children, owing to the greater vulnerability of brain tissues, permanent sequels are more frequent when the malaria occurs during the first two years of life: (1) hemorrhages into the cortex or a focal lesion causing slight encephalopathic syndromes (mental backwardness or idiocy, with or without epilepsy and with or without diplegia); (2) dystrophic states of ordinary infantilism, with retarded physical development and (3) much less frequently, by an elective endocrine lesion, infantilism of the special myxedematous type. Dr. H. Claude, professor of clinical psychiatry in the Faculté de médecine of Paris, treated the question from the medicolegal point of view. Medicolegal experts frequently have occasion to examine delinquents who plead disturbances arising from malaria as the cause of irresponsibility. He raised the question whether subjects who have suffered severely from malaria can present intellectual disability, disorders of character and be handicapped to such an extent that one may say that malaria has transformed their organism. Claude is not inclined to admit that this is possible—at least, not in cases in which there have been no serial psychopathic disturbances since the attacks of malaria. Most of the subjects that he has examined were mentally defective before the attacks of malaria, their previous predisposition being usually aggravated by alcohol and syphilis.

### RELATIONS BETWEEN THE SYMPATHETIC NERVOUS SYSTEM AND THE ENDOCRINE GLANDS

The relations between the sympathetic nervous system and the endocrine glands were treated, from the physiologic and experimental point of view, by Prof. V. Pachon of Bordeaux, and, from the pathologic standpoint, by Dr. Perrin of Nancy and A. Hanns of Strasbourg. Pachon maintained a conservative attitude and referred to the warnings that Vulpian gave to physicians who were inclined to regard all pathologic states as vasomotor disturbances. Time has proved the justice of his counsel. Vulpian would no doubt today utter similar words of warning with reference to endocrine disturbances and their relation to pathologic findings. Pachon holds that the conception of a close linking together of the sympathetic nervous system and the endocrine glands has many experimental facts against it. For instance, there is no justification for assuming the existence of functional relations between the glycosecretory nervous system and the suprarenals. Indeed, the contrary seems to be true: physiologically, the glycosecretory nervous system seems to be functionally autonomous. Experimental study of epinephrin in vasomotor reactions of the sympathetic nervous system and in maintaining arterial tonus does not entitle us to assume the existence of a direct relationship between the neurovegetative system and the suprarenals.

Perrin and Hanns considered the clinical relations of the sympathetic nervous system to the internal secretions: in syndromes of endocrine dysfunction; nervous, organic, functional or trophic syndromes; dermatoses and cutaneous trophic disturbances; colloidoclastic syndromes; infectious diseases and various pathologic states (obesity, diabetes, etc.). They discussed, in turn, endocrine dysfunction with symptoms involving the sympathetic nervous system; affections in which the sympathetic nervous system, influenced by the internal secretions, plays a part in the genesis of certain pathologic disturbances. In their general conclusions, however, Perrin and Hanns were quite conservative, readily admitting that the problems under consideration involve numerous unknown factors and that assumptions and theories do not always find the support they require in established physiologic facts.

Prof. F. Widal of Paris, who took part in the discussion, stated that he recognized that the clinical facts do not permit one as yet to draw definite conclusions concerning the mechanism by which the neuroglandular connections are accomplished; nevertheless he held that these connections exist beyond a doubt. For instance, during the course of Addison's disease, the destruction of the suprarenal capsules and arterial hypertension represent by their association a "law" of anatomoclinical coincidence as well established as any in medicine. The product of the normal activity of the suprarenal cells, epinephrin, is the best and most constant vasoconstrictor known. In Addison's disease and in exophthalmic goiter, certain disturbances of the sympathetic nervous system are specifically differentiated according to the underlying glandular lesion. Disorders of the sympathetic system may occur without association with any endocrine disturbance that can be determined; they may also appear in connection with the most widely different gland lesions. For example, Raynaud's disease, a definitely sympathetic syndrome, is encountered frequently in subjects suffering from hypothyroidism, and may be found also in association with other modifications of the endocrine functions. Widal recalled an interesting observation contained in the thesis of Maurice Raynaud: A woman had frequent attacks of local asphyxia in the extremities, which disappeared when she became pregnant. This occurred with such regularity that the patient came to regard a remission of the attacks of local asphyxia as a sure sign of a new pregnancy. The echo that certain manifestations in the ovaries may awaken in the region of the sympathetic nervous system may also be taken as a case in point that rests on established physiologic experience.

### THERAPY OF MENINGOCOCCUS INFECTIONS

Dr. C. Dopter, professor at the Ecole d'application de médecine et de pharmacie militaire of Val-de-Grâce, presented to the congress the present status of serotherapy in meningitis. He stressed the importance of using the specific antiserum for the particular type of meningococcus involved in the infection, though, until bacteriologic examination has determined the type, it is necessary to inject a mixed serum. If the cultures fail to grow, the trivalent serum may be continued. The serum has no effect on meningeal lesions when it is administered by the subcutaneous, intramuscular or intravenous route. To be truly effective, it must be introduced intraspinally into the subarachnoid space. Since meningeal lesions, however, are frequently associated with septicemia, it is indispensable to give either intramuscular or

intravenous injections, according to the gravity of the general condition, at the same time. The treatment should be given as early as possible and in large doses, even in cases in children. In adults, 20 c.c. is the minimal dose; in severe cases, from 30 to 40, or even 45 c.c., may be injected. The more severe the attack, the larger should be the dose. Cures have been accomplished in cases that seemed hopeless by injecting 100 c.c. in divided doses during a twenty-four hour period. From 10 to 15, or even 30, c.c., if needed, may be injected without hesitation in children under 1 year of age.

The serotherapy of cerebrospinal meningitis requires care; the affection varies greatly in the different cases, and even in the same patient from one day to the next. At any moment new factors may arise; for instance, it may be found that the serum is not being absorbed, or symptoms may appear that indicate blocking in the meningeal space either in the arachnoid or the ventricles. The treatment requires literally "a syringe in the hand and an eye at the microscope." Competent bacteriologic assistance is essential for the proper conduct of serotherapy; the cure of the patient depends largely on the interpretation of the facts observed by the bacteriologist. Cerebrospinal meningitis is an affection that requires the closest collaboration of the clinic and the laboratory.

Dr. Boidin of Paris discussed the adjuvants of serotherapy: vaccinotherapy, pyotherapy, protein therapy, etc. Vaccines may exert their action in two different ways: slow and specific immunization or rapid and general immunization. Until the facts are better established, it is advisable to try first a specific vaccine, preferably autogenous; but, if that is not available, a stock vaccine of the same type. If the microorganism has not been identified, it is well to use a polyvalent stock vaccine. The advocates of vaccine therapy advise a combination with serotherapy from the start; others wait to see whether serotherapy alone will suffice. Though far from constant in its results, vaccinotherapy may, nevertheless, give favorable results in certain cases. Active pyotherapy, or the induction of a fixation abscess, may exert an unquestionably favorable and often decisive influence in a meningococcus infection, whether meningeal or septicemic, after serotherapy has failed. It remains to be seen whether passive antiseptic pyotherapy (injection of pus produced by turpentine), which has already met with some success and causes no disagreeable local reaction, has the same value and the same indications as the fixation abscess. Protein therapy, and, more particularly, intramuscular injections of milk, which have given some good results, is indicated only in meningococcus septicemia. It has little effect on the evolution of meningitis. Among other therapeutic aids, repeated lumbar punctures are sometimes useful; they stimulate choroidal secretion and accelerate the flow of the ventricular fluid into the subarachnoid space. Drainage and endospinal lavage with physiologic sodium chlorid solution or a solution containing citrate to prevent coagulation, have been suggested.

Dr. A. Netter of Paris emphasized the value of polyvalent serum in the initial treatment of meningococcic meningitis, which is of course to be laid aside as soon as the type of the causative organism has been established. New types of parameningococcus are constantly being added to the list of those already known; only recently, in Denmark, a widespread epidemic was occasioned by a hitherto unknown meningococcus. For some time, Netter has been using a polyvalent serum, the first samples of which were sent to him by Flexner of the Rockefeller Institute, prepared with more than fifty strains of meningococcus or parameningococcus. The frequency with which the pneumococcus is associated with the meningococcus induced Netter to inject as a prophylactic 10 c.c. of antipneumococcus serum. Of the various localizations of the meningococcus that are difficult to reach by the intraspinal route, Netter emphasizes particularly suppurations of the petrous portion of the temporal bone. These require combined intramuscular and intraspinal injections.

## LONDON

*(From Our Regular Correspondent)*

Oct. 29, 1923.

### The Panel Struggle

The panel struggle has reached a further stage. The minister of health, Sir William Joynson-Hicks, has written to Dr. Cox, medical secretary of the British Medical Association, stating that he regards the dispute, as concerns the position and payment of the panel physicians, undignified and unprofitable. As minister of health, he has to try to secure the best medical service he can, without putting undue strain on the taxpayer, the employer and the insured person, who are all partners in the matter. The physicians desire to obtain the utmost remuneration consistent with their views of fairness. The friendly societies desire to obtain as much advantage as possible for the millions of insured persons. The minister, naturally, has to take into account both standpoints, but the final test for him is what is best in the public interest. The profession claims that at least $2.25 capitation fee is the fair price. A considerable body of opinion among the approved societies claims that $1.75 is the fair price. The minister decided that $2 for three years, or 12 cents less than that for five years, is the fair price. In these days of unemployment and overtaxation, he simply cannot ask the government for a further subsidy, or put on extra contributions, unless the paramount public interest says that he must get more money one way or other. He repudiates the contention of the British Medical Association that there are millions of dollars in the reserves of the insurance fund available by which the physicians' claims could easily be met. These millions consist mainly of a reserve built up by payments of the younger insured, who are not often disabled by illness. The fund is actuarily essential to meet the heavy claims of later years at an age when sickness is almost certain. As to the request of the physicians for arbitration, one of their points is that, while agreeing that the minister can consult the approved (friendly) societies, they wish to be clear of them. If arbitration ensued, there would inevitably be three parties—the minister, the profession and the approved societies. The profession would then come into direct relation with the societies, whether they liked it or not. The minister gives a strong hint by saying that he is not enamored of the panel system. If the physicians desire a full inquiry into the best method of dealing with medical benefit, including, of course, their fees, he is willing to submit to the government a proposal for a royal commission on the whole subject, and to undertake that the fees now suggested should be reconsidered in either direction.

Dr. Cox has replied, stating that the main point at issue is not money, though he is convinced that the present offer is inadequate. The main object of the British Medical Association is to maintain a good medical service for the insured population, and to have it settled once for all what is the relation of the approved societies to the medical service. The minister has said that the question of the kind of medical service to be given and the payment for it is a matter not to be decided by the approved societies or under their financial pressure, but by himself after consultation with all parties concerned. But the fact remains that the approved societies are threatening him with all sorts of consequences if he takes more than $1.75 out of what they are pleased to call their funds. One responsible organ in the insurance world declares that if the $2.25 is paid, the insured person will be robbed of additional benefits for the advantage of

the physicians. These pretensions make the profession believe that, whatever the minister or the societies say, the latter are demanding to be made the arbiters of the price to be paid for the medical service. The medical profession will never consent to this. Dr. Cox does not admit that arbitration would necessitate the approved societies coming into the matter. It could be admitted only if the minister gave the profession's case away by agreeing that the money paid to the physicians for a national health service for a large section of the community be taken out of a fund belonging to the approved societies. The profession is prepared for full inquiry at any time which will take into consideration not only the physicians' fees, but also the administration of the act. It is not usual, however, to suggest that a party to a dispute should accept a reduction of remuneration pending the report of an inquiry. Dr. Cox suggests that the capitation fee be left as it stands until the report has been made. Thus, it will be seen that a position of some bitterness has developed between the profession and the approved societies. Delegates of the latter have passed a resolution protesting against the proposals of the minister which would involve taking from the contributions an increased sum for payment of a revised capitation fee, thereby depriving insured persons of money which would otherwise be available for essential benefits of a preventive and curative character, such as hospital, convalescent, home, dental and optical treatment, and nursing. Undoubtedly, the societies are bringing all the pressure they can to bear on the minister; but in a democratic country this cannot be prevented. They no doubt desire to control or exercise a good deal of control over the administration of the Insurance Act. The minister has steered a middle course between the two parties, and it does not seem that he is in any way controlled by the societies. In one matter, however, he has given cause for complaint. He had a conference with representatives of the societies, and subsequently one with the representatives of the British Medical Association. He told the latter that he had been immensely impressed by things that had been said to him at his conference with the representatives of the societies, but he declined to say what these things were. The approved societies have issued an official contradiction of the statement of the association that the issue is whether "they shall control a national service and enslave the profession." They point out that the Insurance Act is administered (i. e., controlled) by committees constituted of physicians, pharmacists and local authorities, as well as representatives of insured persons. Approved societies are not seeking to alter this. The only point in which they are interested is whether the amount that may be paid to the physicians in excess of that provided within the contribution paid by the employers and employed shall be taken from the funds of approved societies that have been subscribed by their members for other purposes. If this point is conceded in their favor, approved societies as such cease to be interested in the dispute. They have no desire to dominate the profession. In the meantime, panel physicians are sending in their resignations in great numbers—in many districts they are above 90 per cent. and in some they are unanimous. There is no doubt that the necessary two-third majority for standing out can be more than obtained.

The National Medical Union, a body of physicians who have declined to serve under the panel system, has issued a declaration stating that less than half the profession is concerned in the dispute about remuneration. The union has undeviatingly opposed the insurance acts from their inception, and, in an endeavor to uphold the honor and traditions of a liberal calling, has always set its face against any form of contract medical practice. For years it has pressed successive ministers of health for a full inquiry into the financial arrangements and general working of the Insurance Act. Recently, and almost by chance, it alleges, the British Medical Association discovered that a sum of $500,000,000 had been accumulated out of the compulsory contributions under the act, and the panel physicians used this as an argument against reducing the capitation fee. The union holds that in any distribution of the accumulated funds the claims of the voluntary hospitals should be recognized, as they do a large amount of the work for which panel physicians are paid. Many cases of gravity or complications in insured patients are at once delegated to the nearest voluntary hospital. This, the union holds, is not equitable.

So far there is no indication that any of the parties to the three-sided dispute will recede from the position it has taken up. The opinion seems to be hardening that the outcome will be the scrapping of the present system in favor of one of direct negotiation between the physician and the patient, with payment for each attendance, to be collected in the long run from the approved society. Information collected by the ministry shows that, to a considerable extent, the panel patient declines to employ the panel physician. There is a widespread belief that his services are often given grudgingly and perfunctorily, and that he belongs to an inferior order of practitioner. This view is forcibly expressed in a question addressed to a patient: "Have you been to a proper doctor or to a panel doctor?" But the answer to this is that the great majority of general practitioners are on the panel, which therefore represents the average of the profession.

### The Outbreak of Smallpox

It is now possible to describe completely the outbreak of smallpox in the London area. There were, in all, eighteen cases, of which two were fatal. Of these, eleven occurred in the administrative area and seven outside it. The outbreak was first discovered by a health officer of a south London borough, who found a chambermaid in a hotel, suffering from the disease. Her movements were traced, with the result that in twenty-four hours five more cases were discovered, which all appeared to have derived the infection from her. Ten further cases were soon reported. Vaccinations and revaccinations of those directly or indirectly connected with the original cases were performed. As a result of these energetic measures, the outbreak was localized. Of the eighteen cases, twelve occurred among people between the ages of 23 and 79, who had not been vaccinated since infancy, and of these, one died. Five cases were in persons between the ages of 12 and 50 who had never been vaccinated, and of these, one died. The remaining case occurred in a man who had been vaccinated in the army in 1914; his attack was mild. At a meeting of the Infectious Hospitals Committee of the Metropolis, the admission of these cases led to the passing of a resolution, with three dissentients, asking the minister of health to initiate legislation providing for the repeal of the Vaccination Act, under which parents can obtain exemption from the penalties for nonvaccination of children by means of a declaration that they have a conscientious objection to vaccination.

### Venereal Diseases in Children

At the meeting of the National Council of Women, held at Edinburgh, venereal diseases in children was one of the subjects considered. Dr. Macnicol, of the National Council for Combating Venereal Diseases, moved the following resolution, which was carried: "That in view of the probability that there are children attending schools who are infected with venereal diseases, including hereditary syphilis, and in view of the lack of attention that has hitherto been given to the early diagnosis, or to any special facilities for treatment, the ministry of health and local authorities be urged to give

careful attention to this important aspect of the venereal disease problem." Dr. Macnicol declared that there are numbers of children of school age in this country infected with venereal diseases, many of them suffering from congenital syphilis. If they began to deal with this question at the school age, it would be shutting the stable door after the steed had gone. They must have closer cooperation between antenatal clinics, maternity hospitals, child welfare clinics and school medical officers.

## BUCHAREST

*(From Our Regular Correspondent)*

Oct. 17, 1923.

### Care and Treatment of Epileptics

Dr. P. Avramescu, neurologist, gave a short address before the Bucharest Medical Society on the care and treatment of epileptics. He remarked that society is responsible for the conditions that give rise to epilepsy, and it is the duty of society at large to care for the unfortunate victims. According to him, more than 85 per cent. of epilepsy is inherited, and alcoholism in the parents is responsible for many cases. It has been said that not less than one in every three children of alcoholic parents suffers from epilepsy. Colonization is the only way in which epileptics can be cared for properly. Heretofore, for the most part, they have been shut up with the insane in central Europe, a state of affairs that is unfair to both classes of patients. Most physicians admit that, with rare exceptions, purely medical or surgical treatment is of little or no value. More has been done by hygienic living, strict regulation of the habits of life, and, particularly, by suitable and interesting employment and surroundings.

### Renal Diseases and Cryoscopy

At a recent meeting of the Cluj (Transylvania) Medical Union, Professor Jacobovici said that cryoscopic examination of the blood may have a great value in determining the question of operation. The method depends on the well known physical law that the freezing point varies with osmotic density rather than with specific gravity. Bechmann's apparatus, presented as simple and accurate, was exhibited, and its use was demonstrated. Normally, the freezing point of blood is —0.56 C., and of urine from —1.2 to —2.5 C. It was observed that even after an intravenous infusion of 2,000 c.c., the freezing point of the blood becomes normal in four hours. Jacobovici concluded that cryoscopy indicates the extent to which the kidneys are getting rid of the waste products of metabolism, and that in certain cases of unilateral renal disease it may be a valuable aid in differential diagnosis.

### Taxes and Medical Men

In the last few years, the state has changed its attitude toward medical men. Previously, the physician was accorded special privileges for the reason that he rendered a service to the community. He was exempt from the poll tax, and was absolved from attendance at the biennial military maneuvers; conductors of trains and public vehicles were required to accommodate physicians before others. Now it seems that the medical fraternity has lost the favor of the government. Taxes have been imposed amounting to 16 per cent. of the gross income instead of, as formerly, of the net income after deduction of all expenses, including rent, household, clothing, schooling of children, instruments, and subscriptions to medical journals. The income was formerly fixed by the statement of the physician; now it is determined by a committee consisting of state fiscal officers who know nothing of the conditions under which the income is earned, and make assessments on such grounds as that one official has seen the physician often at the theater (to which he may, by chance, be the appointed medical adviser), that he has recently purchased a new suit of clothes, that he dresses like a dandy, etc. The new practitioner who has not earned even the price of his cigarets may be taxed on a basal income of from 40,000 to 60,000 lei. This means that he must pay from 6,400 to 9,600 lei in taxes, corresponding to the value of from 105 to 156 medical visits. The medical associations have sent deputation after deputation to the ministry, but so far, in vain.

## BELGIUM

*(From Our Regular Correspondent)*

Oct. 15, 1923.

### Belgian Students in the United States

Owing to the generosity of the Conjoint Rockefeller Board Educational Foundation, Inc., the Fondation universitaire sends each year a number of deserving students to the United States to pursue their studies or researches in American universities. The fourth contigent of students thus rewarded has just embarked. It includes eleven engineers, nine physicians, two doctors of law, two doctors of philosophy and belles-lettres, two industrial engineers and a doctor of sciences.

### The Jumet Public Health Demonstration

I have referred several times to the public health experiment that is being undertaken at Jumet (Belgium) under the auspices of the Belgian Red Cross, at the request of the League of Nations. Dr. Depage, in his presidential address before the general assembly of the Red Cross Society, outlined the plan of organization of this vast practical demonstration of public health work, which is divided into three departments: medical visitation, the dispensaries, and popular education in hygiene.

#### MEDICAL VISITATION

The medical profession, as a whole, is charged with the visitation program. By means of lectures in all sections of the district, an endeavor is made to have all inhabitants examined by their regular physician. A record card giving the details of the results is prepared and sent to the central bureau, which is directed by a head nurse. At the central bureau, these record cards are studied, and visiting nurses, using careful discretion, then take steps to induce the inhabitants to utilize the various dispensaries and other services. After the examinations have been made and the record cards have been placed on file, the medical profession will be able to give more intelligent care to the population.

#### THE DISPENSARIES

After the general inquiry has been made, it is necessary to provide facilities for prophylaxis and curative treatment. For this purpose dispensaries have been established: (1) an antivenereal dispensary, inaugurated last February, the activities of which will be organized on new lines, with a fully developed social service; (2) a dispensary of mental hygiene and a medicopedagogic consultation service, which have been functioning satisfactorily since January last, and (3) an antituberculosis service, which, owing to difficulties in connection with the liquidation of subsidies by the minister of the interior, the Ligue nationale contre la tuberculose will not be able to open for several weeks yet. Under the influence of the newly organized propaganda, the child welfare societies have taken on new life. A prenatal consultation service will soon be added.

#### POPULAR EDUCATION IN HYGIENE

Numerous meetings are being held in various circles with a view to educating the public mind in hygiene, the nature of the propaganda depending to a great extent on the psychology of the different groups: teaching personnel, midwives, representatives of mutual aid societies, political and religious groups, and others.

### Hereditary Deaf-Mutism

Before the congress of the Belgian Otorhinolaryngological Society, Dr. de Parrel presented recently an interesting communication based on his personal experience. Among the various factors causing deaf-mutism, hereditary syphilis takes first place. It is responsible for at least 50 per cent. of the cases of hereditary deaf-mutism. The causes next in order of importance are: consanguinity of parents; familial deafness; all causes of degeneracy, dystrophy or endocrine dysfunction, and physical or psychic traumatisms suffered by the mother during pregnancy, which have caused arrest or disorders of development in the peripheral or central organs of hearing.

### The Medical Congress at Antwerp

The great activity displayed by the Flemish medical society, which has manifested its sectional tendencies for the past four years by the publication of the *Vlaamsch geneeskundig tijdschrift* (Flemish Medical Journal) and by the holding of an annual congress, has recently found expression in conferences held in Antwerp. A considerable number of Netherlandic collaborators, among whom were several university professors, joined forces with the Belgian representatives. These annual medical conferences form part of a general movement, which seeks to afford an opportunity for the exchange of ideas among various branches of science. For instance, during the recent medical conferences in Antwerp, simultaneous conferences were held on the natural sciences and on mathematics. This Flemish sectional movement is increasing in importance from day to day, and when one examines the agenda of the recent conference at Antwerp, it is evident that there has been considerable progress since the last congress at Bruges. The program at Antwerp consisted of two parts. A practical feature was the opportunity afforded guests to visit the principal hospital services of the capital. Theoretical discussions of present-day problems brought together a goodly number of hearers. Demonstrations of operations were given by Professors De Beule and Daels; roentgenoscopic methods were shown by Dr. Peremans, and a collection of anatomopathologic specimens (more than 400) was exhibited and commented on by Dr. De Groodt.

One of the best attended lectures was that of Professor Zwaardemaker of Utrecht, who presented the most recent findings on the physiology of the heart, and especially the results of his personal researches and those of his pupils, discussing more particularly the action of radioactive substances on the automatism of cardiac functioning. Dr. Koopman submitted an important communication on the use of insulin, and the results of his exhaustive researches on radiotherapy in exophthalmic goiter. De Backer of Ghent and Moeris of Antwerp are advocates of radiotherapy rather than surgical intervention. Moeris often employs successfully galvanization, after the first treatment, preliminary to radiotherapy.

#### Statistics of the Sequelae of Encephalitis

Dr. Van Boeckel, director of the public health services, presented some interesting statistics on the sequelae of epidemic (lethargic) encephalitis observed in Belgium since 1919. Together with Dr. Bessemans, he had the opportunity of observing 300 cases, 200 of which he was able to follow up in a thorough manner. Of 200 cases, sixty-two resulted fatally, a low percentage compared with the mortality observed in other countries, which has sometimes reached 50 per cent. The sequelae observed were: disturbances of sleep, two cases; dementia, two cases; mental trouble, twenty-five cases; strabismus, one case; chorea, one case; partial paralysis of the leg, one case; partial paralysis of both legs, one case; neuralgia, three cases, and paralysis agitans, twenty-nine cases. Most of these sequelae appeared in patients under 50 years of age. The mental disorders and the disturbances of sleep affected only infants and adolescents. When paralysis agitans appeared, it was associated in more than half the cases with merely a slight attack of encephalitis; the other sequelae, however, followed severe attacks.

## BERLIN

*(From Our Regular Correspondent)*

Oct. 20, 1923.

### Seventieth Birthday of Werner Körte

The Berlin surgeon Werner Körte will reach, October 21, his seventieth birthday. Through his father, the name Körte became known among the medical profession of Germany. The father was one of the most prominent physicians of the capital, and reached the advanced age of 90. The son, Werner Körte, was for many years a general physician with a large practice, until he decided to devote himself to his special field. He secured an excellent foundation while a pupil under Lück in Strasbourg and Wilms in Berlin. In 1889 he was appointed director of the newly built municipal hospital "am Urban," where Albert Fränkel was associated with him in the department of internal diseases. Körte is popular both as consultant and operator. His publications deal mainly with abdominal surgery, especially the surgery of the biliary tracts, and the diseases and injuries of the pancreas, on which he has written monographs. In his contribution to the reference work edited by Schwalbe, which appeared last year, he treats on "Diagnostic and Therapeutic Errors and How to Avoid Them." His treatise on surgery of the lungs was prepared in collaboration with A. Fränkel. In spite of a somewhat acrimonious exterior, Körte is held in high esteem on account of his reliability.

### Death of Prof. Carl Flügge

Prof. Carl Flügge, who was for many years director of the Berlin Hygienic Institute, has died suddenly of heart disease. Five years ago he was compelled, in accordance with the old age pension law, to resign his position. Although he suffered several paralytic strokes, he enjoyed, up to the time of his death, unusual mental vigor and comparatively good physical health. In spite of his advanced age, his death was, therefore, unexpected. He decided in his early years in favor of his special branch of science. From 1875 to 1878 he was an assistant of Franz Hofmann, professor of hygiene in Leipzig. He later removed to Berlin, and became an instructor in hygiene at the university of that city. In 1881 he accepted a call to Göttingen, where a department was opened for him by the director of the Physiologic Institute. In 1883 he became director of the newly founded institute for medical chemistry and hygiene, and two years afterward he was given a chair in hygiene. In 1887 he obtained an appointment in the University of Breslau, and in 1909 he secured a post as successor to Rubner in the University of Berlin. His position in Berlin was from the beginning not the most pleasant. Rubner, who had earned his reputation as a physiologist, had changed the former Physiologic Institute of du Bois-Reymond into the Institute for Hygiene when he became the successor of Robert Koch. During the last years of his activity, there was built, under his instructions, a new Physiologic Institute, in the Invalidenstrasse, which was fully abreast of the times in its equipment. But when Rubner returned to his first love, physiology, he caused this new hygienic institute to be transformed into a physiologic institute, and Flügge was obliged to make the best of the old and entirely inadequate institute in the Dorotheenstrasse. I have personal knowledge of what he suffered under these unfavorable conditions, but, in keeping with his quiet, dignified character, he put up with things as they were and did

not allow untoward conditions to oppress him or to affect his scientific work. Flügge was a scientist and investigator of the first rank, and his performance in his chosen field of research must be appreciated all the more owing to the fact that hygiene at that time was just beginning to be developed. Aside from Pettenkoffer, Germany had, at the time Flügge began his researches, scarcely any hygienists of note. In 1878, Flügge published two articles that dealt with fundamental questions, "Das Wohnungsklima zur Zeit des Hochsommers" and "Zur Kenntnis der Kost in öffentlichen Anstalten." In the last mentioned article, Flügge declared that the quantity of protein demanded by Voit (100 gm.) for the diet of the North German laborer is not provided and, furthermore, is not necessary. In 1879 he published an important treatise on the hygiene of drinking water, and asserted that the usual methods of chemical analysis did not constitute an adequate criterion for determining the quality of drinking water. In 1888 he published a comprehensive textbook on hygienic methods of research. To the handbook of hygiene, published by Pettenkofer and Ziemssen, he contributed a number of articles. In discussing the status of microbiology, he declared himself an adherent of Robert Koch's doctrines. The new methods of bacteriologic research he learned in the laboratory of Koch under the latter's personal supervision. From this time dates the friendship of the two men, which endured up to the death of Koch. This friendship proved valuable to both, for through Flügge Koch became acquainted with many problems of hygiene which lie outside the realm of bacteriology, while Flügge had an opportunity of gaining a better insight into bacteriology. In 1880, he published what was, considering the times, an important work, "Die Mikroorganismen mit besonderer Berücksichtigung der Aetiologie der Infektionskrankheiten." In 1889 appeared his "Outlines of Hygiene," the value of which is shown by the fact that it has passed through ten editions. In his further researches, Flügge contributed much that was valuable in the several branches of hygiene. Most of his articles appeared in the journal founded by Flügge and Koch, *Zeitschrift für Hygiene und Infektionskrankheiten*. Possibly his most important work was on the transmission and control of tuberculosis, which was begun in 1894. Special attention may be called to his discovery that tubercle bacilli are transmitted in the minute droplets of the sputum of the tuberculous. In the cholera question also, he adhered to Koch's conceptions. In his institute at Breslau, M. Neisser discovered the peculiar staining of diphtheria bacilli, which has proved to be of great practical value. His articles on the hygiene of dwellings and of industry are comprehensive and significant. To show how modern his ideas were, it may be stated that in his institute was created the first department of social hygiene, under Grotjahn. In recent years, Flügge, partly on account of his physical condition and partly on account of his retiring disposition, which was in marked contrast with the life of the capital, did not appear much in public. He seldom attended medical sessions, and did not attend the meetings of the Robert Koch Foundation for Combating Tuberculosis, although he was a collaborator who contributed toward the solution of its problems. In Flügge, not only a witness but also a creator of German medicine has gone to his rest.

### Personal

Professor Kuzynski, a department head of the Berlin Pathologic Institute, has accepted a call to the West Siberian University of Omsk, where he will serve, for the time being, as a pathologist, being entrusted more particularly with epidemiologic research.

Professor Gruber, formerly prosector at the municipal hospital in Mainz, has been called to Innsbruck as director of the Anatomic Institute, to succeed Professor Pommer.

## Marriages

ELLIS ARTHUR STEPHENS, Lieut., M. C., U. S. Navy, Washington, D. C., to Miss Kathleen Curtis of Springfield, Mass., at New York, October 27.

SHELTON ELLIOTT WILSON, Dawson, N. M., to Miss Fernande Edelblut of Augusta, Ga., at El Paso, Texas, October 11.

HENRY ELSNER MARKS, New York, to Miss Diana Louise Constance Ponsonby of London, England, October 11.

AUGUSTUS CHARLES BARRY, Norfolk, Neb., to Miss Gretta McClow of Council Bluffs, Iowa, in October.

CHARLES EDGAR WHITE, Pawhuska, Okla., to Miss Carolyn Hearn Hurt of Memphis, Tenn., October 8.

BRANSFORD LOUIS ADELSBERGER, Peoria, Ill., to Miss Helen Scribner White of St. Louis, November 5.

BENJAMIN A. DVORAK, New Prague, Minn., to Miss Beatrice G. Pesek of Minneapolis, in October.

WANN LANGSTON, Oklahoma City, to Miss Clara Louise Jones of Onteora, N. Y., October 6.

ALONZO BYRON WALKER, Canton, Ohio, to Miss Lena Dixon of Burlington, Ill., October 17.

HARRY JOSEPH FRENCH, St. Martinsville, La., to Miss Laulie Guidry of Levert, October 30.

ERMINIA E. GREENBERG to Mr. Edward D. Schwartz, both of New York, in October.

CLAUDE ROSS LAIRD, Blue Hill, Neb., to Miss Emma Krula of Kearney, September 5.

HERMAN L. MASLOW to Miss Pauline Halperin, both of Brooklyn, October 27.

JOHN E. BEEBE, Chicago, to Miss Clara Pause of Oakland, Calif., October 21.

JERALD J. BRUCE to Miss Winifred Travis, both of Omaha, September 4.

## Deaths

**Jacob Block,** San Diego, Calif.; Medical College of Ohio, Cincinnati, 1879; member of the California Medical, the Missouri State Medical and the American Urological associations; formerly professor of genito-urinary diseases at the University of Kansas School of Medicine, Rosedale; at one time a practitioner in Missouri, and on the staff of St. Margaret's Hospital, Kansas City; aged 70; died suddenly, October 31, in Philadelphia, of heart disease.

**Arthur Gibbon Kelley** ✠ Atlanta, Ga.; University of Tennessee College of Medicine, Memphis, 1915; associate professor of pathology and bacteriology at Emory University School of Medicine; served in the M. C., U. S. Army, in France, during the World War; aged 35; died recently, of a skull fracture received when struck by an automobile.

**Albert Ferdinand Brugman** ✠ New York; Medical Department of Columbia College, New York, 1883; professor of pediatrics at the Fordham University School of Medicine; on the staff of the Fordham Hospital, New York, and the United Hospital, Port Chester; aged 62; died, October 30, of cerebral hemorrhage.

**Merwin W. Glover** ✠ St. Louis; Georgetown University School of Medicine, Washington, D. C., 1898; surgeon, U. S. Public Health Service; for many years with the U. S. Bureau of Chemistry, Washington, D. C.; medical officer in charge of the U. S. Marine Hospital, St. Louis, where he died, November 3, aged 49.

**Sidney Philip Delaup** ✠ New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1890; professor of genito-urinary and rectal surgery at the New Orleans Polyclinic of Tulane University; on the staffs of the Charity and New Orleans hospitals; aged 60; died, October 29.

**Lloyd T. Miller,** Caseyville, Ill.; St. Louis (Mo.) Medical College, 1863; Jefferson Medical College of Philadelphia, 1864; Missouri Medical College, St. Louis, 1879; member of the Illinois State Medical Society; aged 82; died, October 25, at the Lutheran Hospital, St. Louis, of senility.

**William T. Masencup,** Echols, Ky.; Kentucky University Medical Department, Louisville, 1903; member of the Ken-

tucky State Medical Association; aged 43; died, August 28, at a hospital in Louisville, of injuries received in an accident.

**Walton L. Bean,** Andalusia, Ala.; Louisville (Ky.) Medical College, 1897; member of the Medical Association of the State of Alabama; served in the M. C., U. S. Army, during the World War; aged 48; died, October 5, of pneumonia.

**Frank Simpson Smith,** Pittsburgh; Medical School of Harvard University, Boston, 1895; member of the Medical Society of the State of Pennsylvania, and the Massachusetts Medical Society; aged 54; died, September 6, of angina pectoris.

**Thomas Connor Brennan,** Shenandoah, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1920; aged 28; was killed, October 20, in Mifflinburg, when the automobile in which he was driving was struck by a train.

**Harry Wyle Emerson,** Centerville, Calif.; Medical Department of Columbia College, New York, 1892; member of the California Medical Association; aged 60; died, October 21, of chronic nephritis and cerebral hemorrhage.

**G. G. Cannon,** Cumberland Furnace, Tenn.; University of Tennessee College of Medicine, Memphis, 1901; member of the Tennessee State Medical Association; aged 49; died, August 28, of carcinoma of the liver.

**James David Don Trumbauer,** Ohio, Ill.; Rush Medical College, Chicago, 1897; aged 48; died, November 5, at the People's Hospital, Peru, of a self-inflicted bullet wound, while suffering from ill health.

**Robert Isaac Allen,** Bristow, Okla.; Barnes Medical College, St. Louis, 1899; member of the Oklahoma State Medical Association; aged 46; died, October 27, of injuries received when struck by an automobile.

**Augustus C. F. von der Luhe,** Brooklyn; Medical Department of the University of the City of New York, 1872; on the staff of the Brooklyn Hospital; aged 73; died suddenly, October 20, of heart disease.

**Henry K. Blough,** Elizabethtown, Pa. (licensed, Pennsylvania, 1881); member of the Medical Society of the State of Pennsylvania; aged 79; died, October 20, of heart disease, while attending a patient.

**James Loyal Christie,** Conoquenessing, Pa.; Miami Medical College, Cincinnati, 1877; member of the Medical Society of the State of Pennsylvania; aged 72; died, October 13, following a long illness.

**Israel Solomon Feinberg,** New York; Medical Department of Columbia College, New York, 1888; member of the Medical Society of the State of New York; aged 58; died, October 28, of chronic nephritis.

**William Henry Harr Bull,** Douglassville, Pa.; Pulte Medical College, Cincinnati, 1885; formerly on the staff of the Walter Clarke Inn, Wernersville; aged 64; died, October 25, of cerebral hemorrhage.

**Will A. Conklin,** Leitchfield, Ky.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1883; formerly county health officer; aged 69; died in October.

**Allen Thomas Leonard,** North Tonawanda, N. Y.; Medical Department of the University of City of New York, 1891; aged 62; died, October 20, of a skull fracture received in an automobile accident.

**Robert C. Prewitt,** Osceola, Ark.; Kentucky School of Medicine, Louisville, 1879; University of Louisville (Ky.) Medical Department, 1884; Confederate veteran; aged 79; died, October 27, of senility.

**John Herman Branth** ✠ New York; Miami Medical College, Cincinnati, 1875; aged 82; died, November 1, at the Roosevelt Hospital, of a skull fracture received when struck by an automobile.

**David Louis Rauch,** New York; Bellevue Hospital Medical College, New York, 1889; formerly on the staff of the Bellevue Hospital; aged 63; died suddenly, October 30, of heart disease.

**Samuel Carpenter Pigman** ✠ Concordia, Kan.; Jefferson Medical College of Philadelphia, 1879; formerly member of the school board and coroner; aged 66; died, November 5, of carcinoma.

**Ralph Elliott Rugh** ✠ Racine, Wis.; Rush Medical College, Chicago, 1903; formerly on the staff of the Lake Geneva (Wis.) Sanitarium; aged 48; died, October 28, of cerebral hemorrhage.

**Henry Jabez Barnes** ✠ Boston; Medical School of Harvard University, Boston, 1872; professor of hygiene at Tufts College Medical School, Boston, 1899-1912; aged 75; died, October 20.

**William Quinton Kendall,** Berlin, Ala.; College of Physicians and Surgeons, Baltimore, 1880; member of the Medical Association of the State of Alabama; aged 64; died, October 23.

**Louis E. McCurry,** Tahlequah, Okla.; University of Arkansas Medical Department, Little Rock, 1890; member of the Oklahoma State Medical Society; aged 63; died, September 12.

**James Dace Plunket,** Nashville, Tenn.; University of Pennsylvania School of Medicine, Philadelphia, 1863; Civil War veteran; aged 84; died, October 29, at Pasadena, Calif., of senility.

**William A. Mosier,** Tekoa, Wash.; Hahnemann Medical College and Hospital, Chicago, 1889; aged 60; died, October 20, in a sanatorium at Portland, Ore., of carcinoma of the stomach.

**Willis Weiss McNamara,** Thompson, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1896; aged 55; died, October 18, at a hospital in New York City, of bronchopneumonia.

**Clarence C. Smith,** Burbank, Okla.; Rush Medical College, Chicago, 1920; member of the Oklahoma State Medical Association; aged 34; was found dead in his office, October 19.

**Raymond Peter Bonelli** ✠ Boston; Tufts College Medical School, Boston, 1907; aged 43; died, September 13, at Wells, Me., of a skull fracture received in an automobile accident.

**Thomas S. Fawcette,** Burlington, N. C.; Baltimore (Md.) Medical College, 1892; member of the Medical Society of the State of North Carolina; aged 55; died in October.

**Zephaniah W. Shepherd,** Ashley, Ind.; Hahnemann Medical College and Hospital, Chicago, 1877; also a minister; aged 85; died, October 19, of cerebral hemorrhage.

**Hugo Rothstein,** St. Louis; Missouri Medical College, St. Louis, 1877; member of the Missouri State Medical Association; aged 85; died, October 22, of senility.

**John Franklin Osborn,** Corning, Mo.; Missouri Medical College, St. Louis, 1880; member of the Missouri State Medical Association; aged 67; died, October 21.

**Oscar J. Fullerton,** Waterloo, Iowa; State University of Iowa College of Medicine, Iowa City, 1884; aged 74; died, October 23, at a hospital in Los Angeles.

**Clarence Rhodolphus Gardner** ✠ Northampton, Mass.; Medical Department of the University of the City of New York, 1879; aged 73; died, October 21.

**James Luther Morehouse** ✠ Fowler, Ind.; Starling Medical College, Columbus, Ohio, 1897; aged 49; died, October 23, of epidemic (lethargic) encephalitis.

**Charles Beers** ✠ Asheville, N. C.; Medical College of Ohio, Cincinnati, 1896; aged 51; on the staff of the Meriwether Hospital, where he died, October 23.

**Patrick Burns,** Perry, Kan.; University of Nashville (Tenn.) Medical Department, 1867; formerly mayor of Perry; aged 77; died, October 20, of myocarditis.

**Ulysses L. Kinnison,** Kirkersville, Ohio; Starling Medical College, Columbus, 1894; mayor of Kirkersville; aged 58; died, October 24, of heart disease.

**John Morris Fry,** Cleveland; Medical Department of Western Reserve University, Cleveland, 1890; aged 55; was found dead in bed, October 23.

**Frederick Hester,** Rushville, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1895; aged 55; died, October 27, of cerebral hemorrhage.

**Charles C. Lucas,** Kearneysville, W. Va.; University of Maryland School of Medicine, Baltimore, 1886; aged 62; died, October 20.

**Aaron B. Ogden,** St. Charles, Iowa; Eclectic Medical Institute, Cincinnati, 1884; aged 63; died, September 3, of cerebral hemorrhage.

**Jackson Vaughn Chilton,** Hannibal, Mo.; Northwestern University Medical School, Chicago, 1923; aged 26; died, October 20.

**James G. Cherry,** Hattiesburg, Miss.; Louisville (Ky.) Medical College, 1873; aged 80; died, October 19, of senility.

**Josephine Lyford Peavey,** Denver; Denver College of Medicine, 1895; aged 61; died, October 20, of carcinoma.

**Winfield Scott McNeill,** Veedersburg, Ind. (years of practice); aged 74; died, October 27, of senility.

# Correspondence

## MORTALITY FROM CANCER

*To the Editor:*—I have recently had occasion to consider the mortality statistics from cancer of a number of representative governments. ("Cancer and Civilization," *Prudential Press,* Newark, N. J., 1923). In this investigation I was not able to give extended consideration to Asiatic governments for which trustworthy statistics are available. However, I here present certain statistics for Japan which may be of interest to your readers, together with a brief table of the cancer mortality of five cities of Finland. I have not been able to secure the cancer mortality statistics of Japan for 1919. (Furnished by the Statistical Division, Army Medical Library, Washington, D. C.)

TABLE 1.—*Mortality from Cancer in Japan, 1911-1921*

| Year | Population of Japan | Deaths from Cancer and Other Malignant Tumors | Death Rate Per 100,000 |
|---|---|---|---|
| 1911 | 50,683,600 | 33,888 | 66.9 |
| 1912 | 52,167,000 | 34,176 | 65.5 |
| 1913 | 52,917,600 | 36,645 | 69.3 |
| 1914 | 53,675,700 | 36,662 | 68.2 |
| 1915 | 54,448,200 | 37,454 | 68.9 |
| 1916 | 55,235,000 | 39,059 | 70.7 |
| 1917 | 56,035,100 | 38,714 | 69.1 |
| 1918 | 55,662,900 | 40,257 | 72.3 |
| 1919 | ..... | ..... | .... |
| 1920 | 55,963,053 | 42,994 | 76.6 |
| 1921 | 56,787,300 | 43,234 | 76.1 |

Table 1 shows the mortality from all forms of cancer in Japan during the period 1911-1921, excluding 1919.

According to this table, the cancer death rate of Japan during the present decade has increased from 66.9 to 76.1 per hundred thousand of population. The Japanese cancer death rate, therefore, approaches the corresponding death rate for the U. S. registration area.

Table 2 shows the mortality from cancer of the breast in Japan, with the rates based on the female population only.

This table reveals a surprisingly low death rate from cancer of the breast, which has probably remained stationary during the decade under observation.

TABLE 2.—*Mortality from Cancer of the Breast in the Female Population of Japan, 1911-1921*

| Year | Female Population | Deaths from Cancer of Breast | Death Rate Per 100,000 |
|---|---|---|---|
| 1911 | 25,528,000 | 481 | 1.8 |
| 1912 | 25,888,400 | 511 | 1.8 |
| 1913 | 26,257,400 | 504 | 1.9 |
| 1914 | 26,630,900 | 507 | 2.0 |
| 1915 | 27,011,000 | 549 | 1.9 |
| 1916 | 27,398,000 | 537 | 1.9 |
| 1917 | 27,538,300 | 606 | 2.2 |
| 1918 | 27,678,600 | 552 | 1.9 |
| 1919 | ..... | ... | ... |
| 1920 | 27,918,145 | 592 | 2.1 |
| 1921 | 28,332,800 | 542 | 1.9 |

Approximately, cancer of the breast is ten times less frequent among Japanese women than among women of the United States or of England and Wales. The results of the present investigation are in strict conformity to previous data made public in my work on the mortality from cancer throughout the world.

There is no more interesting phase of the cancer mortality problem than the differential rate for cancer of the breast among different populations. A somewhat similarly surprising result has recently been revealed by the investigation of the Cancer Committee of the League of Nations with reference to Holland and Great Britain. No field of statistical research in cancer mortality would seem to offer more promising possibilities than a strictly scientific study of the relative incidence of cancer of the breast among different races with due regard to dietary habits, lactation, obstructive clothing and other possible forms of breast irritation.

Even more surprising in this respect have been the results of important investigations among native Indians of North and South America among whom cancer of the breast is of very rare occurrence, if indeed it occurs at all, when there is no intermixture of white blood or any assimilation of the surrounding white population.

Table 3 presents the cancer statistics of large cities of Finland.

In the case of Finland, the cancer death rate of large cities has increased from 66.1 in 1908 to 80.5 in 1918, conforming, in this respect, to the general trend of the cancer death rate in other civilized governments for which trustworthy data are available. The British medical and lay press during recent months has given considerable attention to the relative frequency of cancer among native races or primitive peoples. It is to be hoped that the suggestions made, in this respect, to those who are in a position to render the required services will yield more promising and useful results in the future than has been the case in the past. There is certainly a wealth of material available for the purpose. It may be said in this connection that the statistical division of the Army Medical Library in Washington now possesses the largest collection of international vital statistics accessible anywhere in the world. The data are available, and they require only to be subjected to qualified statistical and medical consideration and analysis.

TABLE 3.—*Mortality from Cancer in Five Cities of Finland, 1908-1918 (Helsingfors, Borga, Lovisa, Fekenas and Hango)*

| Year | Population | Cancer Deaths in Cities | Death Rate Per 100,000 |
|---|---|---|---|
| 1908 | 155,815 | 104 | 66.1 |
| 1909 | 161,767 | 117 | 72.3 |
| 1910 | 167,719 | 106 | 63.2 |
| 1911 | 172,476 | 131 | 75.9 |
| 1912 | 180,001 | 120 | 66.6 |
| 1913 | 186,304 | 133 | 71.3 |
| 1914 | 189,638 | 146 | 76.9 |
| 1915 | 195,535 | 134 | 63.4 |
| 1916 | 202,268 | 154 | 76.1 |
| 1917 | 206,248 | 154 | 74.6 |
| 1918 | 203,566 | 164 | 80.5 |

FREDERICK L. HOFFMAN, Wellesley Hills, Mass.

## A "DIVINE HEALER"

*To the Editor:*—Some weeks ago the associate secretary of the Alberta Medical Association wired your secretary for information concerning the Rev. "Dr." C. S. Price, "Divine Healer," who lays claim to California as his place of residence. Your secretary replied that he could give no data regarding him.

In some way this man has been able to secure the cooperation of ministers and religious organizations to aid and abet him in his practices. Under the guise of religion, he attempts to cure "the lame, the halt and the blind" as well as those with serious organic diseases, calling to his aid hypnotism pure and unadulterated. I may say that he will not admit that it is hypnotic power, but places the onus on the intervention of the Lord.

In many cases, as might be surmised, the results have been disastrous. From official sources in Vancouver, I learn that,

following his séances, twenty victims had to be placed in hospitals, while it was necessary to confine six in the insane asylum. One of the latter died a few days following incarceration.

From Oregon I learn that the same disastrous consequences resulted in Albany, Ashland, Eugene and Corvallis (all towns and cities in Oregon). In Corvallis, according to a physician of Albany, Ore., who writes me, "One woman was put under the 'power' and remained so for four days, dying without regaining consciousness." Other deaths occurred soon after the patients had been pronounced cured by Price. In one typical case, a woman was treated for cancer and pronounced cured; the third day she died, and it was announced that recovery was so rapid that it overtaxed her weakened heart. If the poor dupes show no apparent cure, they are told that it is because of lack of faith.

The financial end of his campaign is cleverly maneuvered, and "love offerings" are sought. In Albany, Ore., after all expenses were paid, out of four weeks' sojourn he netted $2,334; in Victoria and Vancouver, in the neighborhood of $25,000, and in Calgary over $15,000, from a three weeks' sojourn.

I am informed that in Vancouver this man claimed to be a Rotarian, which he is not, and also that he has no right to the title of "Doctor." Some years ago he toured the states with a "medicine show."

Surely, in these enlightened times, practices such as I have outlined should be brought to the full light of day and full exposure made through THE JOURNAL.

G. E. LEARMONTH, M.D., Calgary, Alta.

## CAN THE RECURRENT LARYNGEAL NERVE FUNCTION THROUGH THE DESCENDENS HYPOGLOSSI?

*To the Editor:*—Several cases of paralysis of the recurrent laryngeal nerves, both right and left, have been referred to me by Dr. Chevalier Jackson. The resultant paralysis is most distressing, involving, as it does, not only aphonia, but also dyspnea. In fact, to relieve the latter, Dr. Jackson had to perform a tracheotomy. Dr. Jackson and I discussed the question of relief by nerve anastomosis, and we came to the conclusion that, on theoretical grounds, at least, it might be possible to supply the necessary cortical stimulation by way of the ramus hypoglossi descendens. This operation, with Dr. Jackson's approval, I have carried out on one side, and two months after the operation the following report was received: "Mirror examination shows the glottic chink on deep inspiration to be about twice as wide as before operation. There is more movement in the cord and, while the excursion is only slightly greater, it is I think sufficient to be unmistakable."

While function has not been fully restored, it would appear that eventual recovery is merely a matter of time.

CHARLES H. FRAZIER, M.D., Philadelphia.

**Tuberculin in Diagnosis.**—For more than twenty years we have used the subcutaneous tuberculin test and have encountered no untoward results of any moment. When I pause to think today of the chances we ran in giving the test to many patients with extensive pulmonary tuberculosis but few physical signs, I am convinced that given as we give it today, the tuberculin test is never harmful. We use it only in patients with doubtful or slight parenchymatous roentgen-ray lesions, in whom other sufficient data are lacking. Should the test prove to be negative, we return the patient to his home and work, telling him that if he should ever wish to reenter the institution, we will take him in at once. So far no such patient has ever applied for readmission. Brown: Annual Medical Report, Trudeau Sanatorium, 1923.

# Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### MEDICAL DISCOVERIES

*To the Editor:*—I am anxious to locate in the literature the reference to the discovery of some of the more important advances in preventive medicine. I refer particularly to such discoveries as (1) the use of silver salts for the prevention of ophthalmia; (2) the use of iodin as a prevention of infection; (3) the value of vaccination against typhoid; (4) the importance of infected water for the spread of cholera; (5) the use of quinin for the prevention and cure of malaria, and others of the same type. Are there outstanding names connected with these discoveries similar to that of Jenner in the discovery of the value of vaccination and of Semmelweis in the discovery of the cause of puerperal infection?

A. C. BURNHAM, M.D., New York.

ANSWER.—1. Credé is credited with the introduction of silver nitrate in the treatment of ophthalmia neonatorum.

2. Senn recommended the use of iodin to sterilize the skin in 1905, and Grossich strongly advocated its use in 1908.

3. A. E. Wright introduced vaccination against typhoid in the British Army, and Col. F. F. Russel and associates in the United States Army.

4. Vaughan says that one of the first to recognize that water was instrumental in the spread of cholera was Snow, who brought forward the evidence against the "Broad Street Pump," a case which has become a classic in the history of epidemiology. As early as 1848, Budd of Bristol, England, supported Snow in his claim.

5. Markham, in his book entitled "A Memoir of the Lady Ana De Osoria, Countess of Cinchon," says: "In 1638, the Countess of Cinchon, the wife of the Viceroy of Peru, lay very ill with tertian fever at Lima, the capital city. The news was carried to Canizares, the Corregidor of Loxia, a town among the Andes, in the present Ecuador. Though the natives of Peru were unacquainted with the curative power of the bark, those of the more northern-lying countries appreciated its worth, and from them Canizares obtained the secret. He, therefore, sent a parcel of it to the vice-queen. Her physician, de Vega, agreed to its employment, and she recovered in a short time. In 1640 the Countess returned to Spain, and carried with her a large quantity of the precious bark, which she distributed about her native place in the vicinity of Madrid. De Vega followed and brought likewise a large amount of the bark to Spain, which he sold at Madrid for a hundred orrales a pound. The Countess employed the bark so extensively that for a long time it bore the name 'Countess' Powder (pulvis Comitissae)."

### WHEN IS GONORRHEA CURED?

*To the Editor:*—Some years ago, I read in THE JOURNAL a statement to the effect that no reputable physician was justified in pronouncing a case of gonorrhea cured until treatment had been taken for a period of five years at least; that even then the cure might be considered problematic, and that the patient should consider his case very carefully before thinking that a cure had been effected. It seems to me that I read this article along about 1919 or 1920. I was in a unit in the war that treated this disease, and there it was considered as possible to effect a cure if undertaken before becoming deep seated; but that after becoming deep seated, a cure was very doubtful. Is there anything lately that would tend to contradict this statement? My reason for asking is to combat statements of "wise laymen" who consider the disease as no worse than a "cold." I myself doubt many so-called cures.

CLIFFORD T. COLVIN, M.D., Fowler, Ind.

ANSWER.—Gonorrhea in the male is, in approximately 96 per cent. of subjects, a local disease, limited to the genital tract. The proof of cure must demonstrate, therefore, that this tract harbors no gonococci. By the methods of a past generation, still prevalent, such proof is impossible; for such methods ignore two facts: (1) that in more than half the cases the infection extends to the seminal vesicles, where gonococci may be harbored for years, with no other discharge than an intermittent morning drop; and (2) that the urethra is lined with glands and pockets, the latter half an inch deep and opening toward the bladder in the posterior half, in which likewise gonococci may flourish indefinitely, unharmed by treatment of the urethral surface. So long as intelligent treatment of the urethra, posterior as well as anterior, is continued, there may be little or no discharge; but within a few days after injections are discontinued, the urethra may be reinfected from these pockets, prostatic follicles or

vesicles; and a pus discharge containing gonococci shows that the "cure" was only apparent.

There is, however, a feasible way of securing for examination the contents of all the glands and lacunae of the urethra as well as of the vesicles. It is common knowledge that, during the sexual excitement with erection which precedes emission, there is active secretion by all glands opening into the seminal tract, which secretion floats to the urethral surface their contents, filling the canal to overflowing. This fluid, together with that from the vesicles, constitutes the emitted semen. If repeated expert examinations of the seminal fluid fail to reveal gonococci, their absence from the entire tract is assured—but in no other way. Cultures from the seminal fluid are academically proper, but practically unnecessary if the test described is negative.

The complement fixation test, giving a distinctly positive result, is a strong presumption of present or past infection; but it is often negative even when gonococci are detected in the emitted semen.

## LITERATURE ON THE PROGRESS OF MEDICINE

*To the Editor:*—I have been asked to present a paper on "Medical Progress" before one of the clubs in our town, and should like to know whether you have any literature that would give me the information in a concise form or in an interesting manner, so as to make the paper of value and acceptable to them. Any help you can give me will be very much appreciated.

E. H. J., Kansas.

ANSWER.—The following references may be consulted:

Owen, W. O., and Hitchens, A. P.: Recent Advances in Medicine in 1922, *Internat. Clin.* **1**: 260-276, 1923.
Balfour, D. C.: Recent Advances in Surgery in 1922, *Internat. Clin.* **1**: 277-282, 1923.
Berry, J.: Progress of Surgery and Rise and Fall of Surgical Operations, *Proc. Roy. Soc. Med. (Sect. Surg.)*, January, 1923.
Ridley, E. H.: Recent Progress in Surgery, *Boston M. & S. J.* **184**: 98 (Jan. 27) 1921.
Rooney, R. F.: Over Fifty Years in Medicine, *California State J. Med.* **20**: 354 (Oct.) 1922.
Marsh, A. W.: Changes That Have Occurred in the Past Twenty-Five Years Having an Effect on the Progress of Medicine, *Boston M. & S. J.* **187**: 2821 (Dec. 7) 1922.
Slack, H. R.: Progress of Medicine in the Last Generation, *J. M. A. Georgia* **11**: 405 (Oct.) 1922.
Shelton, W. J.: Progress of Preventive Medicine, *Kentucky M. J.* **20**: 99 (Feb.) 1922.
Whitelock, C. K.: Some Notes on Progress of Medical Science, *Canadian M. Month.* **5**: 242 (June) 1920.
McDonald, S. F.: Recent Advances in Medicine, *M. J. Australia* **1**: 515 (June 5) 1921.
Vaughan, V. C.: Service of Medicine to Civilization, THE JOURNAL, March 14, 1914, p. 2003.
Miller, H. A.: Relation of Chemical Research to Medicine, *Southwestern Med.* **6**: 175 (May) 1922.
Chittenden, R. H.: Research in Chemistry as Related to Medicine, THE JOURNAL, April 29, 1922, p. 1273.
Blackman, G. E.: Half Century of Medicine and Surgery, *New York State J. Med.*, April, 1915.
Grinker, Julius: Progress in Neurology and Psychiatry During the Last Twenty-Five Years, *Internat. Clin.* **4**, 1915.
Nuckols, O. P.: Today and Yesterday in Medicine, *Kentucky M. J.*, October, 1915.
Keister, B. C.: Cursory Review of Surgery and Medicine of Twentieth Century Viewed from Several Angles, *Southern M. J.* **12**: 160 (March) 1919.

## NONSURGICAL DRAINAGE OF THE GALLBLADDER

*To the Editor:*—Please send me some information about medical drainage of the gallbladder: Please omit my name.

——— ———, M.D., South Carolina.

ANSWER.—A full description of the technic may be found in Chapter XVII of the book by Dr. B. B. V. Lyon, entitled "Non-Surgical Drainage of the Gall Tract." The patient presents himself after fasting for twelve hours. Disinfection of the mouth is attempted by thoroughly rinsing the throat with an astringent solution containing zinc chlorid and solution of formaldehyd, followed by rinsing with 1:500 solution of potassium permanganate and again followed by rinsing and gargling with the astringent solution, finishing with a similar rinsing with sterile water. The sterilized duodenal tube is passed to the greater curvature at the 55 cm. mark, at which the gastric residue is extracted by aspiration or gravity. The gastric mucosa is now washed with several changes of sterile water and treated with 250 c.c. freshly prepared solution of protargin mild-N. N. R. or some other antiseptic which is mentioned. The patient now lies on his right side, the proximal end of the tube having been swallowed slowly to the 75 cm. mark. If no free hydrochloric acid is present, the tip is probably in the duodenum. The gallbladder is then stimulated to evacuate its fluid contents by instillation into the duodenum of 75 c.c. of 33 per cent. volumetric solution of magnesium sulphate at body temperature. As a rule, gravity is sufficient to allow the bile to escape. Three types of bile are obtained: A-bile from the common duct, B-bile from the gallbladder, and C-bile from the hepatic duct and liver. The various biles are examined macroscopically and microscopically for sediment and chemical reaction, and cultures are made from which vaccines are also made. A description of these procedures would require considerable space, and can be had by referring to the author's book or to many of his articles.

## DATE OF YELLOW FEVER ANNOUNCEMENT

*To the Editor:*—Please let me know, if possible, the date, day, month and year when it was officially announced that the mosquito is the cause of yellow fever.

W. O. HART, New Orleans.

ANSWER.—The causative agent of yellow fever has not been discovered, although Noguchi claims that *Leptospira icteroides*, which he isolated, is the cause. What our correspondent probably desires to know is the date of the official announcement that mosquitoes transmit yellow fever. This was demonstrated by U. S. army officers in Cuba in the summer and autumn of 1900, and a preliminary report of the work was made before the annual meeting of the American Public Health Association, Indianapolis, Oct. 22-26, 1900. This was published in the *Philadelphia Medical Journal*, Oct. 27, 1900, and in abstract in THE JOURNAL, Nov. 3, 1900. Camp Lazear was then established near Quemados, Cuba, in order absolutely to control the movements of those who were to submit to inoculation. Under these conditions, conclusive evidence was soon obtained to establish the fact that the mosquito transmits yellow fever, and that it is not transmitted in any other way. A report of this work was presented before the Pan-American Medical Congress in Havana, Cuba, Feb. 4-6, 1901, and published in THE JOURNAL, Feb. 16, 1901.

## ALKALI IN DIABETES

*To the Editor:*—Should an alkali—such as sodium bicarbonate—be given in the treatment of diabetes conjointly with insulin? If not, why? Should an alkali be given at all in the treatment of diabetes?

J. S. BOYERS, M.D., Decatur, Ind.

ANSWER.—There is only one indication for the use of alkali in the treatment of diabetes mellitus, and that is the presence of acidosis or coma. In acidosis the presence of organic acid uses up a certain share of the reserve alkali in the body, and a condition of hypo-alkalosis occurs. Sodium bicarbonate is used often to restore the alkali reserve to normal. Medical opinion is divided as to its value. Some authors believe that sodium bicarbonate should be given in doses large enough to render the urine alkaline. Others have seen no benefit from its use, and advise gradual withdrawal if previously it has been employed.

The use of insulin should prevent the occurrence of acidosis and thereby render alkali unnecessary in treatment. In the presence of acidosis or coma, when insulin is being used, the majority of authors seem to favor alkali therapy; but there is no unanimity about the amount. Allen, in his most recent contribution, suggests from 10 to 40 gm. daily. Except in acidosis, diabetic patients are probably better off without alkali, except for the relief of occasional gastric disturbance.

## LIABILITY FOR INJURY FROM USE OF RENTED RADIUM

*To the Editor:*—I desire to take advantage of an opportunity that has been afforded me to rent radium for use in my practice, the rentor advising as to details of application. What would be my legal status if a patient should allege that he had been injured through some fault in advice or application?

H. W. H.

ANSWER.—Under the circumstances stated, the liability of the physician would be in no way different from that of the physician who owned his own radium and used it according to his own judgment. The attending physician must treat his patient with due care and with ordinary knowledge and skill; and, if he fails to do so, and harm results without fault on the patient's part, the physician is liable, even though he may have acted in good faith, on the advice of others whom he supposed to be competent.

## COMPENSATION FOR MEDICAL SERVICES TO SOLDIERS AND SAILORS ON FURLOUGH

*To the Editor:*—I operated for mastoiditis on a sailor of the U. S. Navy, on furlough. I am now told that I must look to the man himself for my pay, as the liability of the government ceases while a sailor is on furlough. What are the facts?

G. F. K.

ANSWER.—The government does not pay civilian physicians for services rendered soldiers and sailors on furlough.

# Medical Education, Registration and Hospital Service

## COMING EXAMINATIONS

DELAWARE: Wilmington, December 11-13. Sec., Dr. P. S. Downs, Dover.

DELAWARE: Wilmington, December 11. Sec., Homeo. Bd., Dr. H. W. Howell, 824 Washington St., Wilmington.

LOUISIANA: New Orleans, December 13-15. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

NORTH CAROLINA: Chapel Hill, December 4. Sec., Dr. Kemp P. B. Bonner, Raleigh.

OHIO: Columbus, December 5-7. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

TEXAS: Dallas, November 20-22. Sec., Dr. T. J. Crowe, Dallas County Bank Bldg., Dallas.

VIRGINIA: Richmond, December 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.

## FURTHER DIPLOMA MILL INVESTIGATIONS IN CONNECTICUT

The main activities in the diploma mill investigation have now been transferred to Connecticut, extensive reports of which have appeared in the Hartford *Courant* and *Times*.

It is now reported that Dr. George E. Sutcliffe of Unionville, Conn., was the physician who confessed to Governor Templeton and other state officers, that he had fraudulently obtained a diploma in Missouri which permitted him to take the examination in Connecticut for a license to practice medicine, details of which were recorded in THE JOURNAL last week.

Sutcliffe's statement has led to an investigation as to how 142 physicians secured their licenses from the Connecticut Board of Eclectic Medical Examiners, by which they have been practicing medicine in that state.

Dr. Sutcliffe is one of the twenty-one physicians whose licenses were declared invalid by the attorney-general of Connecticut last June. It will be remembered, as was mentioned in THE JOURNAL,[1] that the Connecticut legislature passed a bill which would have given them legal authority to practice; Governor Templeton, however, vetoed the bill.

The twenty-one physicians for whom the legislature sought to restore a legal status are reported as follows:

| | |
|---|---|
| Joseph Irving Berlin | Peter K. Koraitus |
| Minnie Telitha Brinkley | Wilbur T. Ledebur |
| John Benjamin Buehler | Samuel Lilienthal |
| Maurice B. Burstan | Catherine Linehan |
| Anthony R. Campo | Etamar A. Mower |
| Harry Chaimson | Robert Ware Rogers |
| Modestino Coppola | George Sutcliffe |
| Frederick Desaunier | Frances M. Axman Tuttle |
| William Feldman | Lamar X. Tuttle |
| Robert P. Hammie | Isadore Yochelman |
| Joseph Koplowitz | |

The original report in regard to these persons which appeared in the Bridgeport *Herald* of June 24, 1923, included also the names of Paul Victor Marzio and Raymond C. Prosque.

An investigation of the records on file at the headquarters of the American Medical Association shows that eight of these individuals are given as graduates of the St. Louis College of Physicians and Surgeons. These are Campo, Chaimson, Coppola, Desaunier, Lilienthal, Mower, Sutcliffe and Yochelman; Burstan as a graduate of the Chicago College of Medicine and Surgery; Feldman of the University and Bellevue Hospital Medical College; Brinkley as a graduate of the Kansas City College of Medicine and Surgery, and Hammie as a graduate of the College of Physicians and Surgeons, Boston. For the other eleven candidates named, the information in the files of the American Medical Association does not indicate that they ever graduated from or even attended any bona fide medical school. One of these "unknowns" Ledebur is reported by the Eclectic Board of Connecticut as a graduate of the Maryland College of Eclectic Medicine and Surgery of Baltimore in the year 1923, although an official statement on file says that the "corporation was dissolved in 1915."

Dr. Hammie is said to have had considerable difficulty in obtaining his original license. It is stated he failed eight times in the examination given by the Connecticut (Regular) Board of Medical Examiners, but passed the examination given by the Eclectic Examining Board with high marks and was certified to the State Board of Health for a license which was issued, but was later revoked when it was found that the school he attended had not been listed as approved by the eclectic board.

In the investigation Health Commissioner Osborn notified Governor Templeton that all the doctors named in the validating bill, vetoed by the governor last June, had since been reexamined and again passed by the Eclectic Medical Examining Board.

A report from the National Eclectic Medical Association published in the Hartford (Conn.) papers states that the Kansas City College of Medicine and Surgery, Kansas City, Mo., has never been recognized by that association. The same report also states that neither the St. Louis College of Physicians and Surgeons nor the National University of Arts and Sciences have ever been recognized by the National Eclectic Medical Association.

In the investigation, the report states that Dr. James Christian, of Fairfield, who had been nominated as a member of the Connecticut Eclectic Examining Board, held a degree from the Kansas City College of Medicine and Surgery. He is said to be the one to whom Dr. Ralph A. Voigt of St. Louis, the alleged mastermind of the diploma ring, referred when, according to the report, in conversation with Dr. Adcox, another member of the ring, he said that "one of the members up there (Connecticut) died and Alex. (Dr. D. R. Alexander) is trying to get one of his past graduates on the board in his place."

This situation was referred to, according to the report, in a letter written to Dr. Adcox by a Chicago physician, the original of which was found in Dr. Adcox's office and shown at Governor Templeton's conference. The letter in part is as follows: "Dear Ad—Was in St. Louis five hours and the first man I tried to locate was you, but nothing doing. Sure wanted to see you too, P. & S. (St. Louis College of Physicians & Surgeons) is now O. K. in Connecticut, but certificates granted before the school was listed are N. G., but from now on everything will be O. K. Looks as though we will have to take the exams over."

This story will be continued next week. Meanwhile what is Arkansas going to do about it?

### Mississippi June Examination

Dr. W. S. Leathers, secretary, Mississippi Board of Health, reports the written examination held at Jackson, June 13-14, 1923. The examination covered 12 subjects and included 96 questions. An average of 75 per cent. was required to pass. Of the 26 candidates examined, 22 passed and 4 failed. Twelve candidates were licensed by reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|---|---|
| Emory University School of Medicine | | (1923) | 83 |
| Northwestern Univ. Med. School | | (1923) 78.5, (1923, 3)* | 79,† 80.5 |
| Tulane University | | (1921, 2) 75, 84, (1922) 88.5, (1923, 6) 83.5, 83.5, 85.5, 88, 89 | 82, |
| University and Bellevue Hospital Medical College | | (1923) | 86.5 |
| Columbia University | | (1923) | 88 |
| University of Pennsylvania School of Medicine | | (1923, 2) | 82, 87.5 |
| Meharry Medical College | | (1923, 3) 76, | 80, 80.5 |
| University of Virginia | | (1919) | 89 |

| College | FAILED | Year Grad. | Per Cent. |
|---|---|---|---|
| Meharry Medical College | (1908) 64, | (1923, 3) 68, | 68, 73.5 |

| College | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| University of Alabama | (1901), | (1904) | Alabama |
| College of Physicians and Surgeons, Chicago | | (1883) | Iowa |
| Rush Medical College | | (1902) | California |
| Tulane University | (1919), | (1921) | Louisiana |
| University of Pennsylvania | | (1909) | Alabama |
| Chattanooga Medical College | | (1904) | Arkansas |
| Meharry Medical College | | (1915) | Missouri |
| University of Tennessee College of Medicine | (1914), | (1921) | Tennessee |
| Vanderbilt University School of Medicine | | (1916) | Louisiana |

* Graduation not verified.
† No grade given.

1. Connecticut Sees the Light, editorial, J. A. M. A. 81: 216 (July 21) 1923.

# Book Notices

MEMOIRS: WITH A FULL ACCOUNT OF THE GREAT MALARIA PROBLEM AND ITS SOLUTION. By Ronald Ross. Cloth. Price, $9. Pp. 547, with illustrations. New York: E. P. Dutton & Company, 1923.

Sir Ronald Ross' Memoirs make a book of nearly 550 solidly printed pages. The author first gives his pedigree, going back into the dim past, where it becomes obscure. Born in India in 1857, during the Indian mutiny, son of an Indian army officer, his early boyhood was spent in that country, but his education was obtained in England. For a time it would seem that he was as likely to be a novelist, a poet or a dramatist as a medical man; for years he dabbled as much in one as in the other; in fact, as late as 1892 he wrote that he was thinking of taking to literature as a profession after his first pension became due. His publications in the field of romance, the drama and poetry alone, judging from the number, indicate diversified talents. Later in life, although he had little fundamental knowledge of the subject, except that which was self taught, he took up and advanced the most abstruse problems in higher mathematics. His incursion into this field may be appreciated by the titles of some of his published papers: "The Algebraic Space," "The Method of Solving Algebraic Equations," "Isosceles Trigonometry" and "The Operative Rules of the Circle-Function."

In 1879 he took the examination—for which he said he was not prepared—and after a three days' "grind" obtained his M.R.C.S. As the Indian Medical Service required a medical as well as a surgical qualification, he took the easiest way, he says, to secure it—that as licentiate of the Society of Apothecaries—"L.S.A." He failed, much to his own discomfiture and to the annoyance of his father, who threatened to reduce his allowance. As he could not come up for another examination for some months, he became a ship surgeon on one of the Anchor Line steamers and relates some of his experiences on his ocean practice. In 1881, he received his L.S.A., passed his examination for the Indian Medical Service, and, after four months at Netley for the course in military medicine, went to India. His account of the life of an Indian Medical officer is both informative and interesting. He is rather pessimistic with respect to the scientific work of the average Indian medical officer, and this is explained by the fact that even at Netley they "were told nothing of bacteriology . . . nor of the parasites of malaria which had been discovered by Laveran."

In 1888, he returned to England on a year's furlough. At that time bacteriology was coming to the fore "even in England," and Ross took a course under Kline; he also took a course in public health, which had just been started, and obtained the D.P.H. In August, 1889, he returned to India, and says that he became really interested in scientific medicine; evidently, however, he was still as much concerned with his various literary ventures as in his professional work.

In the spring of 1894, he went to England on another furlough. At this time he had not become interested in malaria any more than in other diseases prevailing in India. While he knew of Laveran's discovery of the malaria plasmodium, he was not convinced. But on consulting Kanthack, pathologist at St. Bartholomew's, London, and Patrick Manson, his doubts were soon removed. It was this visit to England, especially the personal contact with Manson, that started Ross in the right general direction, which, after many vexatious, discouraging and time-consuming "detours" were made, led to the goal. Manson's knowledge and experience gained while doing parasitology and other tropical medicine work in China, and later in London, made him a valuable adviser for Ross. It was during this year's furlough in England—it was really fourteen months, for he was granted two months' extension—that he won the Park's gold medal and prize of 75 guineas for an essay on malarial fever. This was after he had been a year in England, and is evidence that he had become thoroughly interested in the disease. In this essay, he admits Laveran's parasite, describes the appearance in the blood which were mistaken for the plasmodia, and explains why he had failed to find them; he also discusses the fevers then confused with malaria.

Thus it was that in 1895 he returned to India with entirely different motives and feelings than he had when returning from his previous furloughs. Dominating all was an ambition to solve the malarial problem. Then began a correspondence with Patrick Manson in which, judging from the letters published, Ross gives, step by step, the progress made and the obstacles met and overcome, and tells how finally he demonstrated that malaria—a disease that killed over a million annually in India alone—was caused by the bite of the anopheles mosquito. Altogether, during the four years following April, 1895, Ross wrote 110 letters to Manson and received fifty-five letters from him. Reading these letters, one feels that had it not been for Manson's encouragement, cooperation and helpful suggestions contained in his correspondence, it is not at all impossible that Ross would have given up. Through these letters to Manson, he reported in great detail his daily work, thus making it possible for others to take up the same work and possibly, through better facilities, reach the goal before he did—praiseworthy unselfishness. Many of the letters are reproduced in full; others, in part.

Assuming that malaria is transmitted by the mosquito, the problems to be solved were (1) What particular species of the mosquito is the criminal? and (2) How is the infecting material transmitted? What baffled Ross for a long time, although he did not know or suspect it, was that only a certain species of mosquitoes is concerned. In a letter to Monson, May 12, 1897, these lines occur quite incidentally:

> I found not a single mosquito grub anywhere, but caught a mosquito full of blood in the Rest-House [at Sigur]. This mosquito was small, with wings striped brown and white.

In a footnote, Ross says "the wings were spotted, not striped. It was the first anopheles I had ever observed." A solution of one of the problems was in his grasp, but he did not know it. Four months later, a hospital assistant pointed out a mosquito "seated on the wall with his tail sticking outwards." It was like the insect he had observed at the "Rest-house" at Sigur. He dissected it but found nothing. "While I was doing so, the worthy hospital assistant ran in to say that there were a number of mosquitoes of the same class which had hatched out in the bottle that my men had brought me yesterday." These mosquitoes were used as the other species had been—fed on malaria-infected birds or patients, then studied and dissected. Thus, after two-and-a-half years, Ross, though unsuspecting, was on the right track; he was now working with the anopheles, but many months passed before he learned that it was the real culprit.

The other problem was: Assuming that the mosquito was the causative infecting agent, how was the plasmodium transmitted to man? There were various theories. Aug. 12, 1895, Ross wrote to Manson (p. 172) ". . . so far as I can see, all the facts which I observe respecting the occurrence of malaria fever here can be explained best on the supposition that the poison is conveyed by mosquitoes into isolated pots of drinking water in the houses of men." Hence, various experiments were tried with this theory in mind, such as drying and crushing mosquitoes and inhaling the powder, drinking water in which mosquitoes had been crushed, and water which formed the breeding place of mosquitoes. This was in the early stages of the work. Later, the more important experiments and those which brought results were made with birds. As he says, he was not permitted to experiment with—at least, to attempt to infect—human beings. But birds were satisfactory, for he was finally able to report to Manson (July 9, 1898):

"Now for the clincher. On the 25th of June, I carefully selected three healthy sparrows. Their blood had been examined three times on different occasions and always found free from parasites. On the 25th night, and almost every night following, I have used these birds to refeed a large stock of mosquitoes which had been infected from diseased sparrows on 21st-22nd June. This was the identical stock with which I worked out the story of the germinal rods.

. . . but I hardly expected such knockdown results. All three birds, perfectly healthy a fortnight ago, were now simply swarming with proteosoma—twenty parasites and more in one oil-immersion field."

He repeated these and similar experiments with like results, so that he was able to say to Manson, further on in the letter just quoted, "I may now say Q. E. D., and congratulate you on the mosquito theory indeed. The door is unlocked, and I am walking in and collecting the treasures." The circle was complete.

Meanwhile, Ross had traced the life history of the germ in the anopheles mosquito to the thorax, and in his letter to Manson of July 6, 1898, he says that he is "almost" entitled to lay down the law by direct observation and tracking the parasites step by step—"malaria is conveyed from a diseased person or bird to a healthy one by the proper species of mosquito and is inoculated by its bite." While he was "almost," he was not quite ready to announce the law, and it took him months to demonstrate its correctness.

Ross returned to England in the spring of 1889, and was soon made lecturer on tropical diseases in the Liverpool School of Tropical Medicine, then being inaugurated. Incidentally, to Ross belongs much of the credit for the development of, and the excellent work done at, this institution. While the cause and the mode of transmission of malaria fever had been discovered, this discovery was of no practical value unless it was utilized to prevent the disease. This fact Ross and others tried to impress on the colonial government and others, but without success. Finally, he determined to show what could be done and, through the generosity of a Mr. Coats of Glasgow, he went to South Africa and directed an actual clean-up that proved the value of his methods. Later he went to Ismailia—a fearfully malaria-infected town—discovered the mosquito breeding places, and in a few weeks rid the town of the source of the infection, which was threatening its downfall. In 1900, with a population of 7,000 whites, there were 2,284 cases of malaria. His work in 1902 reduced the number of cases to 214; in 1903, to 90; in 1904, to 37; and in 1905, to none.

Meanwhile, the source of yellow fever had been discovered in Cuba, and the disease eliminated in Havana and the Canal Zone by the eradication of the mosquito, although of a different species. It was this work of the Americans, of Gorgas especially, that made it comparatively easy for Ross to put over his last effort in antimalaria propaganda.

These memoirs are marred by being overloaded with personal grievances, with the reiteration of the author's ill treatment—real or imaginary—and with the emphasis of his personal valor and persistence in overcoming apparently insurmountable obstacles. All this is perfectly appropriate in a biography, but some of it is hardly so in an autobiography. True, Ross had many reasons for complaint and sufficient cause for bitterness against his superior officers in the Indian Medical Service. He certainly did not have their cooperation; rather, it would seem just the opposite. But the goal is reached, success is attained; why recall all the obstacles that had to be surmounted, and especially when the personal equation comes in? Before Ross published these memoirs, the scientific world had recognized him as the discoverer of the cause and of the method of prevention of one of the most serious diseases affecting humanity; honors had been poured on him by his own as well as by other countries; he had been awarded the Nobel prize; he had had conferred on him two knighthoods and several honorary degrees, and had been elected to membership in many of the learned societies in all countries. If some of these honors or recognitions had come to him during his troubles, it would have been splendid. But, alas! this is not the way of the world.

Ross wrote for lay readers, but it is doubtful whether the book will appeal to many layman; it is too overloaded with technical details. But it is a book which every medical man who is interested in the development of modern medicine will read with profit and satisfaction. To the research worker it will be a stimulus, for it is a record of success reached by persistence, by hard work, and by overcoming obstacles that would discourage the ordinary research worker.

THE COMMON NEUROSES: THEIR TREATMENT BY PSYCHOTHERAPY. B. T. A. Ross, M.D., F.R.C.P.E., Medical Director, Cassel Hospital for Functional Nervous Disorders. Cloth. Price, $4.20 net. Pp. 256. New York: Longmans, Green & Co., 1923.

In his preface, the author defines his stand on the problems of the neuroses by declaring himself in accord with the conservative views of Dejerine, which he rightly depicts as more sober and less dazzling than those of Freud and his school of psychanalysis. He does, however, give the latter credit for having thrown much light on the mechanism of the production of the neuroses. Ross believes that the great bulk of functional nervous disorders can be treated successfully by the general practitioner, and it is to him and not to the specialist that the book is addressed. He was, himself, in general practice during seventeen years, and states that he can vouch in what good stead his psychologic knowledge stood him with every class of patient. As may be expected from a follower of Dejerine, the "neurasthenic state" receives the greatest amount of attention. Hysteria is second, and there is a chapter of twenty-three pages on the application of the freudian method. He classifies the neuroses simply by stating that they are the result of three bad ways of reacting to difficulties: (1) by overreaction, which leads to neurasthenia; (2) by underreaction or failure to react at all, leading to hysteria, and (3) pretending that the difficulty is not present, with production of obsessions and compulsions.

LEWANDOWSKYS PRAKTISCHE NEUROLOGIE FÜR AERZTE. Von Dr. R. Hirschfeld. Fourth edition. Cloth. Pp. 396, with 21 illustrations. Berlin: Julius Springer, 1923.

The fourth edition of this well known book, designed specifically for the general physician, has been brought up to date by the inclusion of chapters on epidemic encephalitis, extrapyramidal motor syndromes and the results of war injuries. The original plan of Lewandowsky has been preserved, and emphasis is laid on points of practical importance in diagnosis and treatment. With the present development of the various specialties there is great need for books containing only those fundamentals that are essential for the general practice of medicine, and it was with this in view that Lewandowsky wrote this book. The natural tendency of the neurologist is to include many of the finer points and theories on which he depends as a specialist, with the consequence that the need for concise expression leads to the development of a compendium and the sacrifice of clearness and intelligibility. Excellent as the general plan of presentation is, this book is far from avoiding the danger of obscuring the woods with the trees. The student and general physician will find much that is of real assistance in securing a broad grasp of neurologic principles, but is liable to be appalled by the mass of detail.

FIRST AID X-RAY ATLAS OF THE ARTERIES. By H. C. Orrin, O.B.E., F.R.C.S., Surgeon, Ministry of Pensions Orthopaedic Hospital. Cloth. Price, $1. Pp. 47, with 11 illustrations. New York: Paul B. Hoeber, Inc., 1923.

This booklet is an adjunct to the author's "X-Ray Atlas of the Systemic Arteries of the Body," and is of value in teaching the arterial system to students of first aid. The attempt has been made to clarify the course and relations of the large and small arteries by their injection in chosen cadavers with an opaque material, and exposures of sections of the body to the roentgen ray. The exposures have been well reproduced. It has value in demonstrating the point of election in the application of pressure in arterial hemorrhage in any section of the body.

MISTAKES AND ACCIDENTS OF SURGERY. By Harold Burrows, C.B.E., M.B., B.S., Assistant Surgeon at the Royal Portsmouth Hospital. Cloth. Price, $4 net. Pp. 470. New York: William Wood & Company, 1923.

It must be admitted that the author of this book approaches surgery from an unusual but interesting angle. Beginning with the head and neck, and followed by the thorax, abdomen, and so on, the subject is considered regionally. The discussion is limited chiefly to diagnosis and operative technic. There is no attempt at dogmatism, nor does the author exploit his personal views. The text is obviously the result of wide clinical experience, and can be read with profit by the surgeon.

# Miscellany

## MORTALITY AMONG WAGE EARNERS

Five life insurance companies have cooperated recently in publishing a report[1] on the mortality experience of wage earners. The report covers the period from 1916 to 1920, and a combined membership of twenty-six million. This five-year record shows a mortality rate of 11.65 per thousand lives exposed. There was two dominant factors: the influenza epidemic, and the casualties due to the World War. There has been a greater fall in mortality among these wage earners than among the general population of the country, which may be partly explained by improved living conditions due to better wages during and after the war, and to the effects of health campaigns. The intercompany committee in charge of preparing this report adopted as classification guides the manual of the International List of Causes of Death, the rules of the U. S. Census Bureau for jointly returned causes of death, and the Index of Joint Causes of Death, issued by that office.

Tuberculosis was the leading cause of death among these policyholders, with a rate for all forms of 154.5 per hundred thousand; organic disease of the heart was third, and chronic nephritis, fifth. The death rate from suicide in these five companies during this period was 8.9 per hundred thousand. The suicide death rate declined continuously during this period, among the insured and in the general population. However, when the 1921 figures are published, they will probably show a pronounced increase. Early in 1921 the National Committee for Mental Hygiene directed attention to the large number of suicides, and the industrial depression of that year was probably a principle cause. A comparison of the suicide rates for this period with those of the registration area of the United States brings out the interesting fact that the rate is much higher in the general population than in this group of wage earners. Diabetes had a death rate of 15.4 per hundred thousand, and caused 1.3 per cent. of all deaths. Beginning with age 35, diabetes became an important cause of death and sharp increases were noted in the age period from 45 to 54, 55 to 64 and 65 to 74, with a maximum rate at 75 and over. This, the first report of its kind, applies to a definite stratum of the population. The figures are necessarily accurate, for obvious reasons. Comparison with figures of the Census Bureau is interesting. There are numerous tables for such comparison arranged in this report.

## A LARVICIDAL AQUATIC PLANT

In preparing to direct a campaign against yellow fever in Mexico, Vasconcelos noted the following quotation in a recent book: "An aquatic plant, *Chara foetida*, appears to prevent the development of mosquito larvae in water, according to recent experiments of Caballero. *Chara foetida*, which is quite hardy and grows easily, could be employed advantageously in the antilarval campaign in swamps and lagoons." Obtaining specimens of *Chara gymnophylla* from Yucatan, Vasconcelos (*Am. J. Pub. Health*, July, 1923) set about to confirm this report, and invited several physicians on the east coast of Mexico to do the same thing. He placed a portion of *Chara gymnophylla* weighing about 2 kg. in a wooden trough of 10 liters capacity in which there was a little earth. An enormous number of *Culex* larvae developed in the trough within a few days, and a film of coal oil was laid on the water to destroy them. The coal oil and water were then removed by a continuous flow of fresh water into the trough of several hours' duration. There was then a new crop of larvae within forty-eight hours, but not one of them was normal. Some were dead, some almost motionless; some floated on the surface of the water and made no attempt to escape. The experiment was continued for two weeks with identical results, in spite of the fact that the water in the trough was "continuously" changed. It was noticed also that adult mosquitoes resting on the surface of water in the trough could be easily captured. Cool weather prevented the completion of the experiment. Vasconcelos was sufficiently convinced, however, to agree with Caballero and Connor that the alga in question secretes a substance that kills mosquito larvae. There are five species of *Chara*, it appears, that have a larvicidal action: *Chara foetida, Chara contraria, Chara hispida, Chara fragilis* and *Chara gymnophylla*. Reports of those who cooperated with Vasconcelos in confirming Caballero's observation will be awaited with interest, for if it is true that this plant kills mosquito larvae, a new agent in antimalarial work will have been introduced that is inexpensive and easily applied.

1. The Mortality Experience of Industrial Policyholders, 1916-1920: A Contribution to the Public Health Movement in America by the Colonial Life Insurance Company of America, the John Hancock Life Insurance Company, the Life Insurance Company of Virginia, the Metropolitan Life Insurance Company, and the Prudential Insurance Company of America, New York, 1923.

# Medicolegal

### Exclusion of Physicians from Practicing in Hospital

*(State ex rel. Wolf et al. v. La Crosse Lutheran Hospital Association (Wis.), 193 N. W. R. 994)*

The Supreme Court of Wisconsin says that the petitioners, who were copartners in the practice of medicine and surgery, sought to secure, through a writ of mandamus, their reinstatement as members of the medical staff of the defendant hospital association. But the allegations of their petition failed to reveal any right on their part which might be enforced by mandamus; wherefore an order quashing an alternative writ of mandamus that was issued is affirmed.

The defendant was a private corporation. Its articles of incorporation provided, according to the allegations of the petition, that the board of directors or trustees thereof should have the control and management of its affairs and have power to adopt and enforce reasonable rules, regulations and by-laws to that end. Presumably no one had any voice in the control of the affairs of the corporation except its members. The petitioners were seeking to enforce no right that accrued to them as officers or members of the corporation. Their right to practice their profession in the hospital was subject to the license or consent of the board of directors. If the petitioners had the right to continue that practice indefinitely, it must be due to some contractual relations established between them and the hospital association. It is well settled that duties imposed on corporations, not by virtue of express law or by the terms of their charter, but arising out of contract relations, will not be enforced by mandamus.

Considerable reliance was placed by the petitioners on the constitution and by-laws established for the government of the attending staff, especially on a provision that unprofessional and unethical conduct and violation of the rules of the staff should constitute a cause for expulsion, but that any member against whom charges had been preferred should be notified thereof and have an opportunity of appearing in his own defense before the attending staff and the board of directors in joint meetings; that a three-fourths vote of the staff should be necessary to recommend expulsion of a member. However, these by-laws did not in any manner operate to deprive the board of directors of their power to exclude physicians from practicing in the hospital. They merely operated to give to the members of the attending staff a voice in the matter and to clothe them with advisory powers only. The provision was that a "three-fourths vote of the staff shall be necessary to recommend expulsion of a member." The staff might not expel, it might recommend. If it did recommend, the directors might still do as they please about expelling the member, and the board of directors might expel a member without any recommendation from the staff. This was a power lodged in them by the articles of incorporation, and probably one that they could not delegate if they would. The result of the petitioners' contentions would be to place it within the power of those originally constituting the attending staff to determine who should not practice in the hospital,

a rather important part of the management of the hospital association. This court cannot ascribe any such effect to the constitution and by-laws established for the government of the attending staff.

The power to manage the affairs of the corporation included the power to exclude physicians from the privilege of practicing therein. If the exercise of this power constituted a breach of contractual relations, the rights of the other party must be enforced in a proceeding to recover damages or to enforce specific performance. Mandamus would not lie. In Comb. p. 41, a mandamus to restore a surgeon to a hospital was denied by the court of King's Bench "because it is not in the power of the court nor is it a public office." The writ was denied for a like purpose in *People ex rel. Replogle* v. *Burnham Hospital,* 71 Ill. App. 246.

### Construction of Provision for Release of Women—Duty of Health Officer

*(Ex parte Irby (Kan.), 215 Pac. R. 449)*

The Supreme Court of Kansas holds that a provision, in an ordinance for the isolation of persons affected with venereal disease, that a woman so affected may be released by the city physician on her making an affidavit that she is not a prostitute and giving a bond not to expose any other person to infection is to be construed to mean that such application is to be granted or refused according to whether such officer in the exercise of his best judgment shall find it to be meritorious. An ordinance of the city of Wichita requiring such isolation by the city physician contains a provision that in lieu of isolation or quarantine, any person infected with any of such diseases may be released on bond. Such person shall make written application therefor to the city physician, which application must be under oath and state that the applicant is not a prostitute. The applicant shall then file with the city treasurer a bond for $1,000 conditioned that the applicant will not permit or perform any act that might or would infect or expose to infection any other person, will continue proper medical treatment until cured, and will faithfully observe all rules and requirements of the city physician to protect the public against infection or contagion. The petitioner in this case, having been found by the city physician to be infected with gonorrhea, had been by his order taken to the state industrial farm at Lansing for isolation during treatment. Her petition recited that she had applied to the city physician for release, presenting such a sworn statement and bond as the ordinance describes. She contended that it thereupon became the duty of that officer to release her, and, as he had not done so, she asked to be released by a writ of habeas corpus.

But the supreme court thinks that the ordinance should be interpreted as having this effect: The mere tender of the affidavit and bond does not compel a release, but authorizes it, if in the judgment of the city physician the public welfare will not suffer thereby. The purpose of the ordinance is to release the applicant if she is not a prostitute, rather than to release her if she swears that she is not a prostitute. Her affidavit is not in terms made conclusive, nor from the nature of the case is a purpose to make it conclusive readily to be implied. As the application is addressed to the city health officer, he is the proper person to pass on the question of fact; his decision being final if made in good faith, but subject to be set aside for fraud, oppression or arbitrary conduct.

A writ would be denied in this case, on the presumption that the city physician did not find the petitioner's affidavit convincing, were it not for the fact that the agreed statement recited that he refused to consider her application. He did not have absolute discretion in the matter in the sense that he was free to follow his own wish. His duty was to consider the application and to refuse or grant it according to whether or not in the exercise of his best judgment he found it to be meritorious. The duty would arise irrespective of the ordinance, for the rules of the board of health require isolation only when in the opinion of the health officer it is necessary for public protection. According to the agreed statement, that duty remained unperformed. The occasion for it, however, had not entirely passed. If, on consideration of the petitioner's application on its merits, he should conclude that the interests of the public required its denial, her restraint might properly be continued. Unless on or before a given date a showing that he had in the meantime made a finding to that effect was presented to this court, the petitioner would be discharged. Otherwise no writ would issue.

### Employer Liable for Death from Postoperative Shock

*(National Rolling Mill Co. et al. v. Kish (Ind.), 139 N. E. R. 454)*

The Appellate Court of Indiana, Division No. 1, in affirming an award made by the industrial board of compensation for the death of one Kish, says that he received an injury from an accident arising out of and in the course of his employment by the mill company. It appeared that after his injury he was attended by a physician employed by the company. That physician called another one into consultation. From an examination of a roentgenogram that was made after Kish was injured, the two physicians concluded that he was suffering from "a large stone in the upper bowel of the right kidney," which condition they attributed to his injury, and a surgical operation was advised as a means of relief. The operation was performed by a surgeon who was employed and paid therefor by the mill company. Death followed from postoperative shock.

The operation revealed the fact that Kish was suffering, not from a stone in the kidney, but from a calcareous tuberculous right suprarenal gland, something entirely different from what was expected, and a condition which the testimony tended to show was in no way caused by the injury mentioned. Based on these facts, it was contended that the award of the industrial board was contrary to law; that as Kish was suffering from a tuberculous trouble, and not from a condition which resulted from his accidental injury, the causal connection was broken, and his death was not the result of that injury. Had he survived the operation, and had this been a hearing on an application to modify the award on account of the changed condition, an entirely different question would have been presented for the court's consideration.

But in this case, on the record, the following facts appeared without controversy: that Kish received an injury by accident arising out of and in the course of his employment; that he received medical attention from a physician employed by the company; that a surgical operation was advised by such physician and by a surgeon employed by the company, as the only means of relieving his condition, which he was advised was the result of the accident; that Kish consented to have the company's surgeon perform the operation; that the operation was performed by the surgeon at the expense of the company, and that Kish died of postoperative shock, as the result of the operation. The court sees no break in the line of causation. The finding of the industrial board that Kish's death was the result of the accident sustained by him was, in the opinion of the court, fully sustained by the record.

## *Society Proceedings*

### COMING MEETINGS

American Pathological Society, St. Louis, Dec. 27-29. Dr. Wade H. Brown, Rockefeller Institute for Medical Research, New York, Sec'y.

American Physiological Society, St. Louis, Dec. 27-29. Dr. Charles W. Greene, University of Missouri, Columbia, Mo., Secretary.

American Society of Biological Chemistry, St. Louis, Dec. 27-29. Dr. Victor C. Myers, New York Post-Graduate Medical School, New York, Secretary.

District of Columbia, Medical Society of Washington, Jan. 2. Dr. C. B. Conklin, Medical Science Bldg., Washington, Secretary.

Isthmian Canal Zone, Medical Association of, Ancon, Dec. 21. Dr. J. J. Moore, Ancon Hospital, Ancon, Secretary.

Porto Rico, Medical Association of, San Juan, Dec. 14-16. Dr. Augustin R. Laugier, Box 1117, San Juan, Secretary.

Radiological Society of North America, Rochester, Minn., Dec. 3-7. Dr. M. J. Sandborn, Appleton, Wis., Secretary.

Society of American Bacteriologists, New Haven, Conn., Dec. 27-29. Dr. J. M. Sherman, Box 184, Washington, D. C., Secretary.

Southern Surgical Association, White Sulphur Springs, W. Va., Dec. 11-13. Dr. H. A. Royster, 423 Fayetteville Street, Raleigh, N. C.

Western Surgical Association, Colorado Springs, Colo., Dec. 6-8. Dr. Warren A. Dennis, Hamm Bldg., St. Paul, Minn., Secretary.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Obstetrics and Gynecology, St. Louis

**6**: 257-388 (Sept.) 1923

*Autotransplantation of Endometrial Tissue in Rabbit. V. C. Jacobson, Albany, N. Y.—p. 257.
*Acid Base Equilibrium in Pregnancy and New-Born. A. C. Williamson, Pittsburgh.—p. 263.
Broader Aspects of Birth Control Propaganda as It Should Interest Physician. G. W. Kosmak, New York.—p. 276.
Prenatal Care as Viewed from Public Health Standpoint. R. W. Lobenstine, New York.—p. 286.
*Control of Midwives. H. Bailey, New York.—p. 293.
Treatment of Pelvic Infections in Women. E. W. Holladay, New York.—p. 299.
Pelvic Inflammations, Their Etiology and Pathology. I. Kross, New York.—p. 308.
Utility of Digital Dilatation of Cervix. P. T. Harper, Albany, N. Y. —p. 315.
*Urinary Symptoms in Women Due to Urethral Pathology Only. A. M. Judd, Brooklyn.—p. 318.
Manual Extraction of Placenta. T. R. Goethals, Boston.—p. 322.
Lactation Atrophy of Uterus. H. Schiller, Chicago.—p. 333.
What I Have Learned from My One Hundred and Six Cesarean Sections. S. P. Warren, Portland, Me.—p. 338.
*Puerperal Sepsis (Bacteremia) Caused by Bacillus Influenzae. W. Thalhimer and B. M. Hogan, Milwaukee.—p. 343.
*Stricture of Esophagus Occurring During Pregnancy. P. P. Vinson, Rochester, Minn.—p. 346.
*Case of Sexual Precocity. H. Thoms and A. A. Hershman, New Haven, Conn.—p. 349.

**Experimental Autotransplantation of Endometrial Tissue.**—Fifteen nonpregnant rabbits, from 7 to 9 months old, were subjected by Jacobson to autotransplantation of scrapings and minute pieces of endometrium within the abdominal cavity and the mesosalpinx. After 150 days it was found that (1) normal endometrial tissue free in the abdominal cavity attaches itself usually to the mesosalpinx or mesometrium, not to the abdominal wall or mesentery, and in only one animal was the omentum involved. This distribution is that of most cases of implantation resulting either from a primary dispersion through the fallopian tube, or secondarily from a perforated hemorrhagic (menstruating) cyst of the ovary. (2) There are usually produced multilocular cysts which, except for their small size, are similar in many ways to the "ovarian" cystadenoma of women. (3) Extirpation of the ovaries at the time of transplantation does not prevent growth of the transplants, but the cysts formed are much smaller and thinner walled. (4) In two rabbits, which were in heat at the termination of the experiment, the cornua were swollen and congested, and in a few of the cysts estrual hemorrhage had occurred in small amount but not sufficient to constitute a "hemorrhagic" cyst of the type so common in the ovaries of women.

**Acid Base Equilibrium in Pregnancy and New-Born.**—Graphs are presented by Williamson that show a definite and characteristic drop in the plasma combining power as gestation goes on to completion and labor. In several cases the figures fall within the dangerous or fatal limits. The patients, whose combining power fell within and below the so-called fatal zone and yet recovered, demonstrate the effectiveness of the mechanisms that protect the individual when within the danger limits. The findings suggest a cause for sudden deaths in cesarean sections and other types of delivery when death occurs apparently from shock. This is probably due to acidosis and might be avoided by attention to the lowered carbon dioxid tension. There is a definite and constant difference between the plasma combining power of the mother and the infant. This difference may be due to physiologic lag at the placental barrier, partial asphyxia or an inadequate infantile apparatus for preserving equilibrium.

**Control of Midwives.**—Bailey presents the method of procedure employed in New York in the training of midwives. The standard for admission to the training school should be high and nurses should be permitted to take the course if they intend to practice maternity work in public health positions. The practical training should consist in attendance at 100 cases of confinement. The midwife should not be permitted to take primiparous women and she should be required to present all cases for a prenatal examination so that proper diagnosis of pregnancy and labor may be made by a medical consultant. Vaginal and rectal examinations should be prohibited. All women in labor for twenty-four hours without delivery should be considered as abnormal cases. Consultation with a private physician or medical inspector should follow deliveries conducted by midwives.

**Urinary Symptoms in Women Due to Urethral Disease.**—Judd asserts that the proper method of palpation and stripping of the urethra when searching for discharge is not described in textbooks. It can only be done by using the forefinger of either hand on that extent of the urethra which lies above the symphysis, changing to the thumb when the symphysis is reached; supporting the hand by pressing the finger which has been used in stripping the upper urethra against the back of the symphysis and advancing the thumb from this point downward until the discharge appears at the meatus. At the same time, the forearm is supported by resting the elbow on the knee or thigh. If the finger alone is used, it will, ninety-nine times out of a hundred, slip, and the findings, or rather lack of findings, will deceive the examiner. He urges that treatment of the woman be the same as for the man.

**Puerperal Sepsis Caused by Influenza Bacillus.**—Thalhimer and Hogan report one more case of puerperal infection caused by *Bacillus influenzae*, which makes a total of four published cases of infection of the female genital tract caused by this organism. The most striking feature is the apparently slight virulence of the strains of *B. influenzae* in all four cases. The source of infection is unknown in each case, and none presented a recent history of respiratory infection of any kind. It is interesting also that, though both vaginal and cervical smears showed great numbers of various types of bacilli and cocci, both gram-positive and gram-negative, only a few colonies of *Staphylococcus aureus* and *Streptococcus viridans* developed in the cultures, although many colonies of *Bacillus influenzae* grew.

**Stricture of Esophagus During Pregnancy.**—Vomiting of blood or dark colored material was a prominent symptom in five of the nine cases reported by Vinson; in another it is probable that a peri-esophageal abscess ruptured into the esophagus. Six of the patients had substernal or epigastric pain. All of the lesions were located in the lower half of the esophagus.

**Sexual Precocity.**—Thoms and Hershman cite a case of sexual precocity in a girl, aged 3 years and 11 months, in which the chief characteristics noted were enlargement of the internal and external genitalia, menstruation, enlargement of the breasts, and the presence of pubic hair. When the child was about 1 year old the father noticed that the breasts were larger than normal. At the age of 3 years and 7 months she went through a period of normal menstruation which lasted four days and was accompanied by a good amount of flow. Six weeks later a similar menstruation occurred which lasted three days. After an interval of three weeks this was repeated. Then followed a period of amenorrhea lasting eight weeks when another three day flow was experienced. This has been the last period to the present time. The breasts are those of a woman. The primary areola is well differentiated, the nipple well developed and protuberant. There is no secretion. There is no axillary hair. The pubic hair is moderately thick and covers the pubes. The external genitalia show well developed labia. No internal examination was made. A roentgen-ray examination revealed a normal sella turcica. The child was of average intelligence; her mental age was 3½ years.

### American Journal of Roentgenology and Radium Therapy, New York

**10**: 681-766 (Sept.) 1923

Lateral Position and Other Methods of Examination of Renal and Gallbladder Areas. J. Thomson-Walker and H. Knox, London.—p. 681.
Acute Mediastinal Abscess: Report of Four Cases in Children. O. S. Cook, San Francisco.—p. 696.
*Examination of Posterior Mediastinal Glands in Early Recognition of Pulmonary Tuberculosis. L. B. Crow, San Francisco.—p. 699.

Osteochondritis Deformans Juvenlis. B. R. Kirklin, Muncie, Ind.—p. 701.
Typical Disease of Second Metatarsophalangeal Joint. A. Kohler, Wiesbaden, Germany.—p. 705.
*Two Cases of Localized Metastatic Carcinoma of Vertebrae Without Demonstrable Primary Lesion. C. P. O'Boyle, Philadelphia.—p. 711.
Hypernephroma: Two Cases. H. B. Podlasky, Milwaukee.—p. 714.
Roentgenographic Interpretation of Heoclonic Stasis. E. C. Samuel, New Orleans.—p. 721.
Plea for Use of Roentgenoscope in Diagnosis of Urinary Calculi. J. L. Tabb, Richmond, Va.—p. 722.
Results of Roentgen-Ray Treatment of Pyorrhea Alveolaris. G. von Poswik, Scranton, Pa.—p. 724.
Fifteen Years' Experience with Fractional Dose Method of Treating Cutaneous Malignancies. J. M. Martin, Dallas, Texas.—p. 726.
Radium Needles in Malignant Growths of Tongue: Time Factor. A. J. Larkin, Chicago.—p. 734.
Radium Emanation Slide Rule for Use in Field of Therapeutics. J. Ransom, Chicago.—p. 735.
Flat Diaphragm of Spiral Design in Roentgenography. H. S. Sawford, Kansas City, Mo.—p. 737.
Biologic Reactions of Roentgen Rays: Effect of Radiation on Nitrogen and Salt Metabolism. C. F. Cori and G. W. Pucher, Buffalo.—p. 738.
Deep Roentgen-Ray Therapy and Skin Reactions. P. Del Buono, Naples, Italy.—p. 745.

**Involvement of Posterior Mediastinal Glands Early Sign of Pulmonary Tuberculosis.**—As a negative sign, Crow says, the noninvolvement of the glands in the posterior mediastinum possesses great value in eliminating pulmonary tuberculosis when this disease is suspected. He has examined the glands situated in the posterior mediastinum in about 4,000 cases, and has never failed to find them involved when a frank pulmonary tuberculosis was manifest. In many cases of early pulmonary tuberculosis, when practically no signs were present in roentgenograms of the chest (the fluoroscope showed involvement of the posterior mediastinal glands and there was a suspicious anamnesis), patients have been greatly benefited by being placed on treatment for suspected pulmonary tuberculosis.

**Metastatic Carcinoma of Vertebrae.**—Two cases of metastatic carcinoma of the vertebral column are reported by O'Boyle. The primary focus was not demonstrated in either case. The most prominent symptom in the two cases was pain on motion. By roentgenologic examination such lesions are usually readily diagnosed.

## Illinois Medical Journal, Oak Park

**44:** 153-228 (Sept.) 1923

Ventriculography—Its Place in Brain Surgery. G. L. Davenport, Chicago.—p. 179.
Nine Years of Clinical Research in Trachoma Problem. E. E. Edmondson, Mt. Vernon.—p. 181.
Value of Roentgen-Ray Report as Liaison Between Roentgenologist and Referring Physician. E. S. Blaine, Chicago.—p. 185.
Legislature Matters. J. R. Neal, Springfield.—p. 191.
Chronic Malaria. Some Clinical Aspects. L. J. Petritz, Rockford.—p. 193.
Electro-Roentgenographic Dental Diagnosis. H. Swanberg, Quincy.—p. 197.
Chronic Septic Splenomegaly Syndromes. F. Buckmaster, Effingham.—p. 199.
Cooperation Between Clinical Laboratory and Physician. J. J. Moore, Chicago.—p. 203.
Historical Development of Care of Nervous and Mental Diseases in Illinois. H. N. Moyer, Chicago.—p. 207.
Present Situation Relative to Care and Treatment of Nervous and Mental Diseases in Illinois. L. J. Pollock, Chicago.—p. 212.
Metaphysical Medicine or Two Thousand Years of Faith Cures. W. A. Hinckle, Peoria.—p. 217.
Pedunculated Wart Simulating Renal Calculus. H. L. Baker, Chicago.—p. 224.

## Indiana State Medical Association Journal, Ft. Wayne

**16:** 271-324 (Sept. 15) 1923

Infections of Nasal Acessory Sinuses. S. M. Baxter, New Albany.—p. 271.
Porokeratosis. F. W. Cregor and F. M. Gastineau, Indianapolis.—p 274.
Acute Mastoiditis. A. E. Bulson, Jr., Fort Wayne.—p. 276.
Insulin. G. McCaskey, C. G. Beall and M. F. Porter, Fort Wayne.—p. 279.
Cancer of Esophagus. Report of Case Treated with Radium and Roentgen Ray. Necropsy. M. F. Porter, Fort Wayne.—p. 281.
Chiropractic Philosophy. M. W. Thewlis, Providence, R. I.—p. 282.

## Journal of Biological Chemistry, Baltimore

**57:** 317-631 (Sept.) 1923

Preparation of Diacetone Glucose. P. A. Levene and G. M. Meyer, New York.—p. 317.
Mono-acetone Benzylidene Glucose. P . A. Levene and G. M. Meyer, New York.—p. 319.
Epichitosamine Pentacetate. P. A. Levene, New York.—p. 323.
Preparation of Alpha Mannose. P. A. Levene, New York.—p. 329.
Two Isomeric Chondrosamine Hydrochlorids and Rates of Their Mutarotation. P. A. Levene, New York.—p. 337.
Identity or Nonidentity of Antineuritic and Water Soluble B Vitamins. P. A. Levene and M. Muhlfeld, New York.—p. 341.
*Inorganic Elements of Blood Plasma. A. P. Briggs, St. Louis.—p. 351.
*Concentration of Insulin by Adsorption on Benzoic Acid. P. J. Moloney and D. M. Findlay, Toronto, Can.—p. 359.
*Physiology of Muscular Exercise. V. Oxygen Relationships in Arterial Blood. H. E. Himwich and D. P. Barr, New York.—p. 363.
Biochemical Studies on Allantoin. I. Influence of Amino-Acids on Excretion of Allantoin by Rabbit. A. A. Christman and H. B. Lewis, Ann Arbor, Mich.—p. 379.
Growth of Yeast on Medium of Wholly Synthetic Origin (Methose). E. I. Fulmer, V. E. Nelson and A. White, Ames, Iowa.—p. 397.
*Electrochemical Study of Hemoglobin. J. B. Conant, Cambridge, Mass.—p. 401.
Dietary Properties of Yeast. V. E. Nelson, V. G. Heller and E. I. Fulmer.—p. 415.
Action of Proteolytic Enzymes on Insulin. E. J. Witzemann and L. Tivshis, Chicago.—p. 425.
Refractometric Determination of Hemoglobin. J. L. Stoddard and G. S. Adair, Boston.—p. 437.
*VIII. Microchemical Detection of Lead. L. T. Fairhall, Boston.—p. 455.
Comparative Study of Concentration of Various Anions and Cations in Cerebrospinal Fluid and Serum. J. B. Pincus and B. Kramer, Baltimore.—p. 463.
Asteriastrol. New Sterol from Starfish and Sterols of Certain Other Marine Echinoderms. I. H. Page, Woods Hole, Mass.—p. 471.
Accuracy of "Ionemetric" Method and Protein Correction in Measuring Serum Conductivity. H. C. Gram and G. E. Cullen, Philadelphia.—p. 477.
Micromethod for Determination of Hydrogen Ion Concentration of Whole Blood. J. A. Hawkins, New York.—p. 493.
*Quantitative Color Reaction Given by Epinephrin and Urine. H. Friend, New York.—p. 497.
Nitrogen Distribution in Globin. A. Hunter and H. Borsook, Toronto, Can.—p. 507.
*Study of Several Cases of Cystinuria. J. M. Looney, H. Berglund and R. C. Graves, Boston.—p. 515.
Normal Variations in Plasma Hydrogen Ion Concentration. G. E. Cullen and H. W. Robinson, Philadelphia.—p. 533.
*Effect of Insulin Treatment on Hydrogen Ion Concentraton and Alkali Reserve of Blood in Diabetic Acidosis. G. E. Cullen and L. Jones, Philadelphia.—p. 541.
Strophanthin. II. Oxidation of Strophanthidin. W. A. Jacobs, New York.—p. 553.
III. Crystalline Kombe Strophanthin. W. A. Jacobs, New York.—p. 569.
*Observations on Dogs with Experimental Pyloric Obstruction. Acid-Base Equilibrium, Chlorids, Nonprotein, Nitrogen and Urea of Blood. A. R. Felty and H. A. Murray, Jr., New York.—p. 573.
*Clinical Calorimetry. XXXIII. Effect of Fasting in Diabetes as Compared with Diet Designed to Replace Foodstuffs Oxidized During Fast. H. B. Richardson, E. H. Mason and G. F. Soderstrom, New York.—p. 587.
Application of Quinhydrone Electrode to Electrometric Acid-Base Titrations in Presence of Air, and Factors Limiting Its Use in Alkaline Solution. V. K. La Mer and T. R. Parsons, Cambridge, England.—p. 631.

**Inorganic Elements of Blood Plasma.**—A system of methods is outlined by Briggs for determining the inorganic elements in blood plasma. Analyses of a number of pathologic plasmas are presented which, except in nephritis, show fairly normal values. It is asserted that marked variations in the level of inorganic elements of blood are quite exceptional.

**Concentration of Insulin Solutions.**—In the preparation of insulin on a large scale a problem of considerable importance is the concentration of dilute aqueous solutions. On account of the expense and loss of potency which result from boiling, it seemed desirable to Moloney and Findlay to investigate the possibilities of adsorption. They found that if a dilute solution of sodium benzoate in an impure aqueous solution of insulin is acidified, finely divided benzoic acid is precipitated and carries down with it a large percentage of potent material. If this method of concentration is carried out on a highly purified solution, the amount adsorbed is not so large as in an impure solution. This is probably due to the relative size of the particles of benzoic acid; the benzoic acid from the impure solution giving more adsorbing surface than that from a more purified solution. It was noted also that even in very acid solutions the potent material is partly carried down. This method of precipitating insulin with benzoic acid was successfully used in solutions containing 5 units in each 30 c.c.; the resulting solutions readily contain 5 units per cubic centimeter in a highly purified form. This method has been used on a large scale on the concentrate from the original alcoholic extract of the gland.

**Anoxemia Causes Hyperpnea.**—Experiments made by Himwich and Barr suggest the possibility that in exhausting exercise an anoxemia in the arterial blood may play a part in the causation of hyperpnea.

**Electrochemical Study of Hemoglobin.**—Preliminary experiments made by Conant with hematin seem to indicate that the reduction of this substance to hemochromogen involves the addition of two hydrogen atoms. If this is so, Conant asserts that the relationship between this pair of compounds has no bearing on the problem of the oxidation or oxygenation of hemoglobin.

**Modified Hexanitrite Test for Lead.**—A modified procedure for the hexanitrite test for lead is described by Fairhall and applied to the detection of lead in biologic material. By means of this method as small a quantity as 1 mg. of lead may be separated and identified in the presence of a considerable amount of other inorganic salts. The test may be used as a satisfactory and relatively simple clinical method for the detection of lead.

**Color Reaction Given by Epinephrin and Urine.**—The color reaction described by Friend depends on the fact that epinephrin reacts with sulphanilic-nitrous acids in the presence of an alkali (ammonia) to give a red color. The phenols present in urine, which cannot be removed, also give the color. This necessitates the running of two determinations simultaneously, one with the addition of an iron suspension to destroy the epinephrin. The phenols are not affected by the iron. The amount of epinephrin, or of substance reacting like epinephrin, is estimated by the decrease in the color of the one containing the iron.

**Familial Cystinuria.**—Looney, Berglund and Graves investigated five cases of cystinuria occurring in one family—the mother, her two sisters and two daughters. The results of this investigation confirm most of the conclusions of Alsberg and Folin, and of Wolf and his co-workers. The excretion of cystin is not simply an index of a general disturbance in the metabolism of the amino-acids, but a definite entity confined to cystin. Of these five cases only one gave definite record of disease of the urinary tract with the formation of calculi.

**Effect of Insulin Treatment on Alkali Reserve.**—The behavior of the acid-base balance was followed by Cullen and Jonas in diabetes during insulin treatment. The acidosis of severe diabetes is characterized by the lowering of both alkali reserve and plasma $p_H$. Under insulin treatment both alkali reserve and $p_H$ return to their normal level coincidently. There appears to be a consistent relation between these two factors during the return to normal. Two cases of coma with recovery under insulin treatment with plasma $p_H$ at 38 C. of 6.98 and 7.02, respectively, are reported. These are believed to be the lowest values for human plasma $p_H$ with recovery that have been reported.

**Blood Studies After Experimental Pyloric Obstruction.**—In seven dogs in whom complete or partial pyloric stenosis was effected, Felty and Murray noted, after operation: a rise in $p_H$, which, however, was only marked in the three dogs that developed tetany; a marked increase in bicarbonate concentration; a very rapid diminution of chlorids in the plasma, whole blood, and tissues which could be accounted for by the amount of chlorid secretion into the gastro-intestinal tract above the point of obstruction; an inconsistent, but, in some cases, a marked rise in urea and nonprotein nitrogen of whole blood. Mention is also made of an increased concentration of phosphorus in two dogs and an augmented electrical resistance noted while taking electrocardiograms in four dogs. The electrocardiograph was negative in each case.

**Effect of Fasting and of Dieting on Diabetes.**—By means of the respiration calorimeter the quantities of protein, fat and carbohydrate oxidized by diabetic patients at rest were determined by Richardson and Mason. The same amounts were given in a diet termed a replacement diet. With this the metabolism was held at the level previously reached by fasting. According to evidence based on the respiratory quotient, the replacement diet was attended with an increase in the quantity of protein and carbohydrate oxidized, and of glucose excreted. To remedy this defect, it should be modified by decreasing the protein and carbohydrate, and increasing the fat, thus approaching the Newburgh type of diet. A method is described for the quantitative comparison of the food ingested with the food oxidized. Diabetic patients receiving their basal caloric requirements, plus, in several instances, considerable quantities of fat, oxidized more protein, more carbohydrate and less fat than they received. In other words, to their allowance of food they added protein and carbohydrate derived from their own tissues and subtracted a considerable portion of the fat for storage. It is inferred that the quantities of food eaten by diabetic patients may be widely different from the quantities oxidized, and that calculations based on the diet are subject to error.

## Journal of Laboratory and Clinical Medicine, St. Louis

**8**: 775-848 (Sept.) 1923

*Basal Metabolic Rates in Some Psychoneuroses. B. S. Levine, Waukesha, Wis.—p. 775.
Clinical and Laboratory Procedures in Pediatrics. A. Levinson, Chicago.—p. 790.
Investigations on Double Type of Receptors in Typhoid-Paratyphoid Group and Their Significance for Widal Reaction. A. M. Fishberg, New York.—p. 806.
Bacteriophage Phenomena. II. L. Arnold, Chicago.—p. 813.
*Sugar in Urine. R. L. Thrasher and C. W. O. Bunker, Washington, D. C.—p. 816.
Ultrafiltration of Blood Serum and Cerebrospinal Fluid with Special Reference to New Apparatus. G. Egerer-Seham, Minneapolis, Minn.—p. 818.
*Method and Diagnostic Value of Quantitative Determination of Sugar in Cerebrospinal Fluid. G. H. Moates and J. J. Keegan, Omaha.—p. 825.

**Basal Metabolism in Psychoneuroses.**—One hundred psychoneurotic patients were tested by Levine for their basal metabolic rates because of the presence of two or more of the cardinal signs believed to be indicative of exophthalmic goiter. Only eight of the 100 were found to be affected with primary organic afflictions, the remaining ninety-two being classified primarily as cases of psychoneurotic type. Of the group, as a whole, fifteen patients possessed rates with a percentile variation exceeding the +10.0 per cent. limit, and only four cases possessed rates with a percentile variation below the −10.0 per cent. limits, making a total of 19.0 per cent. of cases with basal metabolic rates lying without the ±10.0 per cent. limits. Further statistical study shows that the average of the plus rates of the group, as a whole, is −7.4 per cent.; that of the minus rates, −6.5 per cent., and the total average rate is −2.0 per cent. Less than 30.0 per cent. of the cases studied had metabolic rates the average of which was qualitatively of a minus type. Less than one third of these, or only about 10.0 per cent., were below the −10.0 per cent. limit. There was a more frequent occurrence of "high raters" among neurasthenics suspected of hyperthyroidism than among cases of other neuroses. The coexistence of secondary psychoneurotic manifestations or of organic concomitants of the types met with does not seem to influence the basal metabolic rate in any way. Close observation of psychoneurotics with high metabolic rates has led the authors to the conclusion that the high rates in most instances are not due to an hyperthyroidism or exophthalmic goiter superimposed on a well defined neurosis, but rather that the hyperthyroidism or the exophthalmic goiter are the direct consequences of, or rather the necessary response to, the mental state of the patients. Consequently, any amount of surgical treatment, such as ligation or even excision, will lead only to an hypertrophy of the remaining tissue, frequently to such an extent as to make the postoperative basal metabolic function unstable and, in most instances, of a higher magnitude than it was before the operation. This seems to be especially true of "high raters" manifesting the anxiety syndrome complicated by some sexual complex. To perform any surgical operation, except the one absolutely warranted and found necessary after a joint consultation of an internist, surgeon, and a competent psychiatrist thoroughly acquainted with the case under consideration, means to introduce into the patient's life new points of fixation, added causes for fear and worry, and hence, an increased demand on the thyroid.

**Sugar in Urine.**—Benedict's qualitative test for sugar in urine, according to Thrasher and Bunker, has quantitative

significance in only the most general terms. Greenish turbidities secured in this test demand care in their interpretation, and are to be considered pathologic only when other features of the case warrant such an assumption.

**Sugar in Cerebrospinal Fluid.**—The normal range of the cerebrospinal sugar is between 0.040 and 0.068 per cent. The sugar content of the cerebrospinal fluid, Moates and Keegan found, is distinctly increased in most cases of epidemic encephalitis and has a diagnostic significance. Sugar in the cerebrospinal fluid is decreased in infectious meningitis probably as the result of the reducing powers of the invading micro-organisms. There is no apparent relation between the sugar content of the cerebrospinal fluid and the Wassermann reaction, colloidal gold curve, cell count, globulin or total protein.

## Journal of Urology, Baltimore

**10:** 185-274 (Sept.) 1923

*Studies on Ureter and Bladder. Regurgitation of Vesical Contents. R. C. Graves and L. M. Davidoff, Boston.—p. 185.
*Relation of Bowel to Bacillus Coli Kidney Infections. V. C. David and E. C. McGill, Chicago.—p. 233.
*Antiseptic Pyelographic Medium. J. H. Cunningham, R. C. Graves and T. L. Davis, Boston.—p. 255.
*Temporary Suppression of Urine Following Double Pyelography. H. M. Morton, Brooklyn.—p. 261.
Tremendous Bilateral Ureteral Dilatation in Adult. E. Davis, Omaha.—p. 267.
Case of Hematuria from Lead Poisoning. N. F. Ockerblad, Kansas City, Kan.—p. 273.

**Bladder Regurgitation Causes Ascending Infections of Urinary Tract.**—Because of its bearing on ascending types of renal infections, regurgitation of vesical contents was made the subject of a special study by Graves and Davidoff. The occurrence of regurgitation was first studied in seventy-three normal rabbits, the bladders of which were slowly filled with warm physiologic solution of sodium chlorid. The phenomenon was observed in 73.7 per cent. of these cases. In this series attention was particularly concentrated on the relation of the bladder to reflux. In a second group of animals, the ureters had been rendered abnormal by previous operative procedures. Regurgitation was produced in 78.7 per cent. of the attempts. Several animals were subjected to complete urinary obstruction for the purpose of producing regurgitation as a result of prolonged retention. In a final series reflux was studied in the intact animal, and the phenomenon was witnessed through the fluoroscope in six of eleven experiments. On the basis of this work the authors believe that bladder regurgitation may be accountable for ascending infections of the urinary tract, particularly in cases of vesical neck obstruction.

**Relation of Bowel to Kidney Infections.**—David and McGill conducted experiments on dogs to study the possibility of the passage of bacteria and especially the colon bacillus, through the normal and pathologic bowel wall to the mesenteric glands, to the blood stream or directly into the urinary tract through the lymphatics. Small amounts of actively growing colon bacilli injected into the stomach of dogs had no appreciable effect in increasing the bacterial content of the mesenteric glands, the blood stream or the urinary tract. In eleven dogs which had been given large amounts of *B. coli* with fat by stomach tube, eight were found to have organisms in the mesenteric glands, six of which were *B. coli*. The incidence of organisms in the mesenteric glands was slightly higher than in the control animals but not sufficiently so for definite conclusions. The incidence of organisms in the urinary tract was much higher than in control animals and was striking because of the negative urine in these animals before experimental conditions were established. Very marked constipation, even associated with injection of *B. coli* into the gastro-intestinal tract, was not associated with increased bacterial content of the mesenteric glands or with infection of the urinary stream. Prolonged and severe diarrhea was not associated with infection of the urinary organs or with an increased bacterial flora in the mesenteric glands, even though large amounts of *B. coli* were introduced into the intestinal tract. Obstruction of the large bowel raised the incidence of bacteria in the mesenteric glands very materially. In no experiment did urinary tract infection accompany it. This emphasizes the fact that the presence of intestinal organisms in the mesenteric glands is not synonymous with blood stream infection or urinary tract infection. Traumatism of the bowel was associated with a higher percentage of bacterial content of the mesenteric glands than in control dogs. Urinary tract infection was absent. Actively growing *B. coli* in the mesenteric glands was not necessarily associated with blood stream infection or urinary tract infection and negatives the probability of infection of the kidney by the way of the lymphatics from the bowel. In these experiments bacteria implanted in the mesentery or glands were isolated from the mesentery and mesenteric glands several days after their implantation and yet no urinary tract infection resulted.

**Antiseptic Pyelographic Medium.**—After consideration of all possible antiseptics in connection with a pyelographic solution, Cunningham, Graves and Davis decided that 1:3,000 mercuric iodid in 0.12 per cent. sodium iodid solution is the most satisfactory. Sodium-mercuric iodid of this strength has a phenol coefficient of 0.033. In other words it is comparable, on this basis, to 3 or 4 per cent. phenol. Used in equal amounts with a colon bacillus infected urine, it destroyed bacterial growth in two and one-half minutes. The solution retained in the mouth for a considerable period produces a salty taste, but no irritation of the buccal mucosa. Introduced into the circulation of a rabbit, it produced no significant change in the condition of the animal so far as heart, blood pressure, and respiration were concerned.

**Temporary Suppression of Urine Follows Double Pyelography.**—Morton cites a case which illustrates the danger of attempting double pyelography at one time, for if the secretion of one kidney is impaired, the patient has the other kidney with which to carry on elimination until the temporary anuria has subsided.

## Laryngoscope, St. Louis

**33:** 657-730 (Sept.) 1923

Classification of Deafness from Standpoint of Pathology, Functional Tests and Pedagogy. M. A. Goldstein, St. Louis.—p. 657.
Results of Functional Tests of Vestibular and Auditory Apparatus in Forty-Four Children with Congenital or Early Acquired Deafness. A. M. Alden, St. Louis.—p. 665.
New Plastic Procedure for Closure of Perforations of Nasal Septum. J. D. Lewis, Minneapolis.—p. 671.
Treatment of Hemorrhage Following Tonsillectomy by Ligation. J. F. Callahan, Brockton, Mass.—p. 675.
Use of Radium to Induce Atrophy of Faucial Tonsils. W. A. Wells, Washington, D. C.—p. 681.
Use of Suction in Disease of Accessory Nasal Sinuses. M. Unger, New York.—p. 691.
Anatomic and Pathologic Structure of Larynx. E. M. Josephson, New York.—p. 699.
Control of Pain of Herpes Zoster of Nervus Ophthalmicus Through Nasal (Sphenopalatine, Meckel's) Ganglion and Through Sphenoid Sinus. W. M. C. Bryan, St. Louis.—p. 703.
Varix of Vocal Cord. Histologic Study in Sixteen Cases. C. B. Faunce, Boston.—p. 706.
Symptomatic Case of Mastoiditis. T. T. E. Hughes, Richmond, Va.—p. 716.

## New York Medical Journal and Medical Record

**118:** 333-396 (Sept. 19) 1923

Present Day Treatment of Asthma. A. Brown, New York.—p. 333.
Physical Therapeutics. J. M. Taylor, Philadelphia.—p. 336.
Quinin Test in Hyperthyroidism. I. Bram, Philadelphia.—p. 339.
Typhoid Fever. J. C. Small, Philadelphia.—p. 341.
Physiologic Effects of Static and High Frequency Currents F. De. Kraft, New York.—p. 347.
*Indigocarmine as Functional Permeability Test of Liver. M. Einhorn and G. L. Laporte, New York.—p. 350.
*Interesting Case of Laryngeal Stenosis. E. M. Josephson, New York.—p. 352.
*Septic Portal Thrombosis. Report of Two Cases. W. I. Sirovich and G. Schwartz, New York.—p. 354.
Intussusception in Infants. L. M. Kahn, New York.—p. 356.
Cancer of Breast. What Can General Practitioner Do to Improve Prognosis. L. B. Meyer, New York.—p. 358.
Gastro-Intestinal Infections in Chronic Arthritis. G. A. Persson, Mount Clemens, Mich.—p. 363.
Significance of Spinal Mercurial Manometer. A. S. Maclaire, New York.—p. 367.
Appraisal of Newer Methods of Deep Roentgen-Ray Therapy. J. T. Case, Battle Creek, Mich.—p. 368.
Splenectomy for Traumatic Subcutaneous Rupture of Spleen. M. S. Kakels, New York.—p. 372.
Atresia of Anus, Rectum and Esophagus. J. H. Marcus, Atlanti City. —p. 374.

**Indigocarmin Functional Test of Liver.**—Einhorn and Laporte record their experiences with indigocarmin as a convenient test for liver function. At first they tried to give this substance in suppositories by rectum or by injection of solutions into the rectum. Then they tried the intramuscular method, as suggested by Hatieganu. Ten c.c. of a 1 per cent. solution of indigocarmin proved to be the correct amount for general use. In cases in which there was difficulty in obtaining the duodenal contents after the injection of indigocarmin, a few cubic centimeters of saline solution was injected through the duodenal tube and syphoned out. This, in most instances, effected a flow of bile. In only rare instances were other means resorted to in order to establish a flow of bile. In these cases the authors usually applied an instillation of 25 per cent. glucose solution into the duodenum. In all these cases the urine was likewise watched. The average time of first appearance of the indigocarmin in patients not afflicted with liver troubles was about forty minutes. In diseases of the liver, especially when accompanied by jaundice, its appearance was usually delayed, most in malignant trouble of the liver, in one case not appearing until two hours after injection and in another case, one of cancer of the liver, it did not appear at all. In one case of catarrhal jaundice the indigocarmin did not appear in the bile, the period of observation lasting four hours. The injection of indigocarmin also produces a stimulation of the liver secretion, resulting in the production of a dark bile, previous to or after the appearance of the indigocarmin in the bile.

**Inflammation of Mucous Gland Causes Laryngeal Stenosis.**—The case presented by Josephson was one of laryngeal stenosis caused by a primary infection of a laryngeal structure, consisting principally of a group of secretory glands, secondarily conditioning a necrosis of the arytenoid cartilage. The onset was acute, febrile, associated with a stomatitis, and the infection initially acute, subsequently ran a chronic course. The stenosis in due time became so high grade that tracheotomy was necessary to relieve dyspnea. In view of the failure of palliative treatment, including iodids, mixed, and arsphenamin treatment, enucleation of the gland was necessitated. The gland was readily enucleated submucously.

**Septic Portal Thrombosis.**—In one of the cases cited by Sirovich and Schwartz there was a large abscess cavity in the gastrocolic omentum. The abscess cavity, as far as could be ascertained, had no connection with the transverse colon or stomach, but because of the close proximity of the stomach to the abscess cavity, there was little doubt that the abscess was the result of a perforation of the stomach. The portal vein was occluded completely by a large septic thrombus. Frank pus was found in the portal vein, and the liver on section showed miliary abscesses. In the second case the portal vein contained a large septic thrombus which included about three quarters of the lumen of the vein. The liver showed miliary abscesses.

## Southern Medical Journal, Birmingham, Ala.

**16:** 647-736 (Sept.) 1923

*Deafness in Late Congenital Syphilis. A. Keidel and J. E. Kemp, Baltimore.—p. 647.
*Vaccines in Treatment of Secondary Infection in Pulmonary Tuberculosis. C. H. Cocke, Asheville, N. C.—p. 651.
Physiologic and Philosophic Study of Relation of Sleep to Bodily Nutrition. G. M. Niles, Atlanta, Ga.—p. 659.
Efficiency of Therapeutics. W. R. Houston, Augusta, Ga.—p. 664.
Mental Disease Problem. G. L. Echols, Milledgeville, Ga.—p. 668.
Food and Life. C. H. Rice, Jr., Montgomery, Ala.—p. 673.
*Transfusion Through Umbilical Vein: Case Report. J. B. Sidbury, Wilmington, N. C.—p. 676.
European Child Health Program, American Red Cross, 1921-1922. J. H. M. Knox, Jr., Baltimore.—p. 679.
Obstruction of Bronchi by Nonopaque Foreign Bodies: Case Report. C. C. Phillips and R. H. Lafferty, Charlotte, N. C.—p. 685.
Modification of Van Slyke and Cullen Aeration Block in Determinations of Ammonia and Urea in Blood and Urine. R. J. Miller, University, Ala.—p. 688.
Recent Advances in Treatment of Hookworm Disease. A. T. Cooper, Fort Benning, Ga.—p. 689.
Public Confidence and Medical Profession. O. Dowling, New Orleans.—p. 691.
Ankylosis as True Cure of Destructive Joint Tuberculosis. E. G. Brackett, Boston.—p. 697.
Conclusions After Six Years' Use of Radium. E. D. Newell, Chattanooga, Tenn.—p. 706.
*Pregnancy with Impassable Vagina: Case Report. R. M. Wilson, Kwangju, Korea.—p. 708.
Intestinal Obstruction. T. W. Holmes, Winona, Miss.—p. 708.
Tuberculosis of Larynx. H. H. Briggs, Asheville, N. C.—p. 715.
Group Medicine: Process of Evolution. R. B. McBride, Dallas, Texas.—p. 722.
Group Medicine: Critical Survey. W. T. Vaughan, Richmond, Va.—p. 724.

**Deafness Caused by Late Congenital Syphilis.**—Twenty-two cases of deafness due to late congenital syphilis are reported by Keidel and Kemp. The incidence of this form of deafness is approximately 10 per cent. The symptom complex is characteristic. Active manifestations of congenital syphilis other than aural lesions coexist with or antedate the malady and are often of unusual severity. Of these interstitial keratitis is the most common. The blood Wassermann test is positive in over 90 per cent. of the patients, and spinal fluid studies were invariably negative for abnormalities due to cerebrospinal syphilis. Cranial nerves other than the branches of the eighth are rarely involved. The prognosis is not good, and the results of treatment are poor. Adequate treatment of all patients with early congenital syphilis is advocated as a prophylaxis for late aural involvement.

**Vaccines of Limited Value in Secondary Infection in Tuberculosis.**—Cocke is emphatic in stating that autogenous vaccines should never be used in pulmonary tuberculosis as a routine measure. They are of very limited value and should be administered only to selected cases free of demonstrable foci of infection which have been studied sufficiently to warrant the attempt at specific therapy and in whom the usual routine conservative measures have failed. They should never be used to the exclusion of these measures, and if reliance is put on them with disregard for more essential matters a great deal of damage will result. The dose should be calculated carefully and an attempt at a general reaction of serious nature should not be made. A fair and honest trial in the individual case without improvement on the patient's part should be sufficient ground for discontinuance.

**Transfusion Through Umbilical Vein.**—Sidbury reports a case of transfusion through the umbilical vein on the fourth day of life because of continuous bleeding from a dorsal slit incision of the penis made just after delivery.

**Pregnancy with Impassable Vagina.**—In Wilson's case the vagina had been obliterated by scar formation. The Oriental woman, after the child is born, gets up at once and goes to work. Consequently, many cases of complete prolapsus occur, the uterus being down between the legs. The Oriental treatment is to apply pure nitric acid to the uterus, cauterizing it and then replacing it, and sometimes complete adhesion follows. Often the vagina is entirely destroyed. As a result of the cautery the vagina of Wilson's patient had been obliterated by scar tissue, and at labor it was impossible for her to bear the child. It died at labor and then began to decompose. Four months later she was brought to the hospital with a very foul smelling condition. Wilson dilated the small opening and removed from the uterus the bones, hair and some remnants of tissue, the balance of the child having already passed out in a purulent form. The patient was much emaciated, but after being a week in the hospital returned home.

## Texas State Journal of Medicine, Fort Worth

**19:** 265-312 (Sept.) 1923

Pituitary and Some of Its Disorders. M. L. Graves, Galveston.—p. 272.
Some Disturbance of Pituitary Body Illustrated. C. A. Wright, Los Angeles.—p. 278.
Etiologic Factors in Bronchial Asthma. I. S. Kahn, San Antonio.—p. 283.
Influence (?) of Endocrines on Lenticular Opacities. I. L. Van Zandt, Fort Worth.—p. 286.
Nasal Ganglion Neurosis. Endocrine Aspects. C. B. Williams, Mineral Wells.—p. 289.
Insulin in Diabetes. D. W. Carter, Dallas.—p. 290.
Pathologic Biochemistry in Diabetes. W. H. Bailey, Oklahoma City.—p. 295.
Factors Affecting Blood Grouping and Transfusion. K. M. Lynch, Dallas.—p. 298.
Blood Transfusion as Therapeutic Agent; Use of Whole Blood. R. H. Moore, Dallas.—p. 300.
Transverse Myelitis Following Influenza. R. B. McBride, Dallas.—p. 303.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### Archives of Radiology and Electrotherapy, London

**28:** 97-128 (Sept.) 1923

Cauterization of Adhesions in Artificial Pneumothorax Treatment of Pulmonary Tuberculosis Under Thoracoscopic Control. H. C. Jacobaeus, Stockholm, Sweden.—p. 97.
Roentgen-Ray Stereoscopy. R. Kegerreis, Rochester, Minn.—p. 105.
Elevation of Diaphragm. Unilateral Phrenic Paralysis. Differential Diagnosis. J. M. Woodburn Morison, Manchester.—p. 111.
Stimulating and Paralyzing Effect of Roentgen-Rays. W. E. Schall.—p. 124.

### British Journal of Children's Diseases, London

**20:** 129-192 (July-Sept.) 1923

*Serum Phenomena and Their Relationship to Prognosis of Diphtheria. G. W. Ronaldson.—p. 129.
*Muscle Tone in Rickets. J. D. D. Galbraith.—p. 143.
Epispadias Associated with Complete Incontinence Treated by Rectus Transplantation. A. R. Thompson.—p. 146.
*Twenty-Five Cases of Whooping-Cough Treated by Injections of Ether. A. Panayotatou.—p. 151.

**Relation of Serum Phenomena to Prognosis in Diphtheria.**—Ronaldson's conclusions based on the consideration of 1,000 cases afford additional confirmation of Rolleston's assertion that "the more marked the antitoxin reaction, the better is the prognosis." Increased dosage increased the incidence of serum manifestations, but diphtheria toxin exercises an inhibitory influence both on the frequency and the intensity of serum reactions. In very severe cases the rash is late in development, scanty, or entirely absent. The presence of a rash, even of the most limited nature, is a favorable sign. A good rash suggests a good prognosis. A case with a well marked reaction is not likely to end fatally, and the appearance of a rash affords some assurance that severe paralysis is unlikely. A primary rash is valueless in forming an estimate as to the likelihood of paralysis generally, its value being restricted to the severer forms. A secondary rash enables one to forecast with confidence that the patient will neither die nor suffer from paralysis of the graver types.

**Muscle Tone in Rickets.**—Emphasis is laid by Galbraith on the condition of the musculature in rickets, and clinical observations support the view that the disease may involve muscles as well as bones. Bad hygienic conditions, by depressing muscle activity, would be strong predisposing factors to the development of rickets.

**Ether Injections in Whooping Cough.**—Twenty-five cases of whooping cough were treated by Panayotatou by injections of 2 c.c. of ether every second day. The result was rapid recovery in all in from twelve to fifteen days.

### British Medical Journal, London

**2:** 547-590 (Sept. 29) 1923

*Treatment of Obstruction of Colon. A. H. Burgess.—p. 547.
*Are Results of Operative Treatment of Cancer Better Than Twenty Years Ago? H. J. Paterson.—p. 556.
*Standardization of Commercial Preparations of Parathyroid Glands. H. W. C. Vines.—p. 559.
*Treatment of Hypothyroidism by Thyroid Transplantation. A. Kocher.—p. 560.
*Differential Diagnosis of Rheumatoid Arthritis As a Clinical Entity. V. Coates and R. G. Gordon.—p. 561.
*Large Renal Calculus. R. O. Ward.—p. 563.
Treatment of Urticaria with Collosol Manganese. H. McC. Mitchell.—p. 563.
Vaccination Propaganda and Medical Professions. C. K. Millard.—p. 564.

**Cecostomy for Obstruction of Colon.**—When, in any given case of acute intestinal obstruction, the site of obstruction can be assigned to the colon but is not more precisely known, and when there is no special reason to suspect volvulus or internal strangulation, Burgess believes that a cecostomy should be the sole immediate procedure.

**Results of Operative Treatment of Cancer.**—H. J. Paterson pleads for earlier and, therefore, less extensive operations, and especially operations in two stages whenever practicable—that is, removal of the growth and of the glands at a later period. Although evidence is lacking that the ultimate results of operation for cancer are better than they were twenty years ago, Paterson sees no grounds for pessimism. What is needed, he says, is a vigorous campaign to impress on the public the supreme importance of early recognition of the disease and operation for its removal at the very earliest stage.

**Standardization of Parathyroid Preparations.**—It is generally held that the parathyroid glands have two functions: they regulate calcium metabolism, and they are in some way able to prevent intoxication by guanidin and its derivatives. On this second property the standardization method proposed by Vines is based. The principle is as follows: if an active parathyroid preparation is incubated at 37 C. with a known amount of guanidin in solution, the amount of guanidin reckoned as picrate at the end of the incubation period is found to be less than at the beginning of the test. Only one function of the glands is, therefore, tested, but there is reason to believe that if the preparation is deficient in this function it will also be deficient in the other. The method of procedure is described in detail.

**Thyroid Transplantation for Hypothyroidism.**—Kocher prefers to use homotransplants taken from the hypertrophic gland of a severe but recent case of exophthalmic goiter, which is in a state of cellular hypertrophy and active new formation of vesicles. The best part of the gland to be taken is the upper pole or posterior part of the gland near the superior thyroid artery. It is essential that the pieces of gland shall be put into the receiver's body immediately after being cut out of the donor. Kocher transplants mostly into the upper end of the tibial bone, because it is very vascular and has a special affinity for thyroid tissue. However, he also transplants into the sheath between the fascia transversalis and peritoneum, or into the peritoneal cavity. But in the latter locality it is better to stitch the parietal peritoneum over the transplanted gland and not put the gland free into the peritoneal cavity. If the graft is to be successful, the healing of the wound must take place without rise of temperature or other postoperative reaction. Most important of all is the preoperative and postoperative treatment. The patient must take thyroid some time before and several weeks after the transplantation, in order to decrease his actual want of thyroid, because if this is great, the transplanted gland tissue is simply eaten up by the organism. Failure to observe this need is the most common cause of failure of transplantation, especially in cases of total congenital absence of the gland.

**Achlorhydria in Rheumatoid Arthritis.**—Coates and Gordon lay emphasis on the presence of achlorhydria in these cases as a causative factor. Of the twenty cases examined, fourteen had complete achlorhydria, one a trace of free hydrochloric acid only, two a marked diminution, while three were normal. Achlorhydria precedes not only the anemic conditions, but also chronic gastritis which formerly was supposed to be the cause of the achylia. The gastritis is due to the failure of the normal softening and diluting action of the juice, and as the food is not sufficiently digested in the stomach, it will irritate the intestine in the same way and cause intestinal dyspepsia. At the same time, proteins will reach the small and large intestines unchanged, and with them numerous bacteria which would normally be destroyed by the acid disinfecting properties of the gastric juice. The decomposition of the proteins by these bacteria produces further irritative material which modifies the absorption of toxins.

**Large Kidney Stone.**—Large stones of the kidney are not common; the calculus weighed one pound three and one-half ounces in this case, and it is of interest that the symptoms were very mild; operative treatment was successful.

### China Medical Journal, Shanghai

**37:** 709-796 (Sept.) 1923

Conjunctival Bridge as Safeguard Against Vitreous Loss in Cataract Extraction. H. J. Howard.—p. 709.
Blood Pressure of Normal Cantonese Students. W. W. Cadbury.—p. 715.
Life History of Schistosoma Japonicum Katsurada. E. C. Faust and H. E. Meleney.—p. 726.
Identification of Babies by Means of Footprints. L. M. Miles.—p. 734.
Early Diagnosis of Laryngeal Tuberculosis. J. H. Liu.—p. 738.
Chinese Drugs of Therapeutic Value to Western Physicians. P. C. Kiang.—p. 742.
Aneurysm of Temporal Artery. B. R. Vickers.—p. 747.
Imperforate Anus: Report of Case. E. H. Brunemeier.—p. 748.

## Indian Journal of Medical Research, Calcutta

**2:** 1-320 (July) 1923

*Pathogenesis of Deficiency Disease. No. XI. Fat Excess in Relation to Iodin Requirements and to Thyroid Gland. R. McCarrison.—p. 1.
Antihookworm Campaign in Tea Estates of Madras. K. S. Mhaskar and J. F. Kendrick.—p. 52.
Some Indian Species of Genus Phlebotomus. J. A. Sinton.—p. 65.
Studies in Filariasis. No. 1. Filarial Survey with Statistical Enquiry into Relationship Between Filariasis and Elephantiasis. J. A. Cruickshank, J. Cunningham and T. S. Iyer.—p. 79.
Correlation Between Chemical Composition of Anthelmintics and Their Therapeutic Values in Connection with Hookworm Inquiry in Madras Presidency. XVII. Antiseptics. J. F. Caius and K. S. Mhaskar.—p. 92.
Id. XVIII. Cathartics. J. F. Caius and K. S. Mhaskar.—p. 103.
Influence of Age and Temperature on Bacterial Vaccines. W. F. Harvey and K. R. K. Iyengar.—p. 110.
Relation Between Size of Prophylactic Dose and Protection. W. F. Harvey and K. R. K. Iyengar.—p. 113.
Bacteriologic and Laboratory Technic. W. F. Harvey.—p. 119.
*Tetrachilomastix N. Sp. Parasitic in Human Intestine. G. C. Chatterjee.—p. 177.
*Rat Bite Fever: Its Etiologic Agent. M. J. Parmanand.—p. 181.
Pathology of Acute Experimental Kala-Azar in Monkeys. H. E. Shortt.—p. 186.
Chemotherapy of Antimonial Compounds in Kala-Azar Infection. Toxicity of Antimonial Compounds—Delayed Antimony Poisoning. U. N. Brahmachari.—p. 196.
Revision of Culicine Mosquitoes of India. Part III. P. J. Barraud.—p. 214.
Id. Part IV. P. J. Barraud.—p. 220.
Id. Part V. P. J. Barraud.—p. 224.
Wassermann Reaction in Leprosy. R. B. Lloyd, E. Muir and R. G. C. Mitra.—p. 229.
Interval for Retreatment of Hookworm Infection. K. S. Mhaskar and J. F. Kenrick.—p. 234.
*Value of Wassermann Test in Kala-Azar, No. 5. K. R. K. Iyengar.—p. 237.
*Spread of Leprosy Throughout Body from Initial Lesions. E. Muir, E. Landeman, T. N. Roy and I. Santra.—p. 239.
Dysentery in Colliery Areas; Jheria Mining Settlement. G. C. Maitra.—p. 296.
Outbreak of Typhus in Simla. Weil-Felix Reaction. E. S. Phipson.—p. 305.
Recovery of Herpetomonas Donovani from Urine of Kala-Azar Patient. H. E. Shortt.—p. 319.

**Fat Excess in Relation to Iodin Requirements and to Thyroid.**—The results reached by McCarrison in the course of his experiments with pigeons may be summarized as follows: Confinement in cages that became grossly contaminated by the animals' own excreta is a potent cause of thyroid hyperplasia and enlargement. It can be prevented by scrupulous cleanliness and to a less extent by the administration of chlorin water. The thyroid hyperplasia under these circumstances is not due to inadequate supply of iodin in the food, but is probably due to the inadequate absorption, assimilation or utilization of iodin consequent on the conditions provided by dirty animal cages; of these conditions gastro-intestinal infection is considered to be chief. An excess of butter or of oleic acid in the food may, in certain cases, enhance the goiter producing action of insanitary conditions of life, such as are present in dirty animal cages; or, the goiter producing influence exerted by an excess of fats in the food may be enhanced, in certain cases, by such insanitary conditions of life. There is a reason to believe that the effects of fat excess in determining thyroid hyperplasia may be related in some way to bacterial intervention in the digestive tract. Cod liver oil affords complete protection against goiter induced by insanitary conditions of life, such as are present in dirty animal cages. A relation exists between the intake of fats in the food, the amount of available iodin in the food and the functional perfection of the thyroid gland.

**Tetrachilomastix in Intestine.**—This intestinal flagellate is very common in India in the stools of patients suffering from chronic intestinal complaints. It apparently has little pathogenic property. In one case, in particular, it was found by Chatterjee in large numbers along with innumerable *Endameba coli* organisms; the patient complained of colicky pain over the abdomen and was anemic. A provisional diagnosis of duodenal ulcer was made.

**Spirochetes in Rat Bite Fever.**—In the primary skin lesion of a case of rat bite fever, Parmanand was able to demonstrate spirochetes apparently identical with Futaki's spirochetes. Subsequently three more cases were encountered from two of which guinea-pigs and white mice were inoculated, the spirochetes being recovered from these inoculated animals.

**Wassermann Reaction in Kala-Azar.**—An unselected, apparently healthy Indian male adult population has given a positive Wassermann reaction in eighty-eight cases out of 400. Iyengar, therefore, infers that a figure of not more than 20 per cent. occurring in an unselected Indian male adult population suffering from kala-azar must be due to existence in this population of latent or clinically inactive syphilis.

**Spread of Leprosy in Body.**—Muir and his associates assert that the multiplication of leprosy bacilli in the body takes place in the lymph channels. The nourishment required by the bacilli for multiplication is supplied by the surrounding tissues and the lymph. The setting free of bacilli in the lymph spaces is due to softening or solution of the matrix in which the bacilli lie embedded. As a rule the superficial layers of the skin are first infected. Later the infection spreads to the deeper layers. Muscle and bone changes are due to fibrous pressure on the nerve trunks. Nerve leprosy has a relation to skin leprosy, the one tending to increase while the other tends to diminish, and vice versa.

## Indian Journal of Medicine, Calcutta

**4:** 57-122 (June) 1923

Cardiac Rhythm. A. R. Majumdar.—p. 57.
Snake Bite and Its Treatment. P. Ganguli.—p. 68.
Treatment of Influenza by Quinin. S. N. Banerjee.—p. 75.

## Indian Medical Record, Calcutta

**43:** 241-272 (Sept.) 1923

Field Work for Control of Kala-Azar in Bengal. D. N. Banerjee.—p. 241.
Kala-Azar in Malda and Some Practical Difficulties in Its Treatment. R. D. Roy.—p. 243.
Prevention of Malaria and Kala-Azar in Bengal. G. Panja.—p. 244.
Duties of Medical Man to Development of Antimalarial Societies. M. K. Ray.—p. 246.
Anti-Malarial and Anti-Kala-Azar Works. R. H. G. Bahadur.—p. 247.
Different Factors in Control of Malaria and Kala-Azar in Bengal. S. N. Nandi.—p. 251.
Anti-Kala-Azar Campaign and Cost of Management of a Center. A. N. Mitra.—p. 254.
Old Age. A. Roy.—p. 258.

## Irish Journal of Medical Science, Dublin

**4:** 241-290 (Sept.) 1923

Report of Coombe Hospital for 1922.—p. 241.
Infant Feeding: Pirquet's System. M. M. O'Leary.—p. 277.

## Journal of Tropical Medicine and Hygiene, London

**26:** 285-296 (Sept. 15) 1923

Lamblial Dysentery Treated with Carbon Tetrachlorid. M. Khalil.—p. 285.
*Treatment of Erythromelalgia Tropica by Injections of Antimony. J. T. Clarke.—p. 285.

**Antimony Treatment of Erythromelalgia.**—Clarke has treated thirty cases by injecting 1 grain of antimony tartate, diluted in 20 minims of water, into the muscles of the buttock once a week. All of the patients have been benefited; most of them are cured. Some have required six, some have been cured with two injections. In one case of four months' duration apparent cure was effected by one injection.

## Lancet, London

**2:** 637-684 (Sept. 29) 1923

*Effect of Roentgen Rays of Different Wave Lengths on Some Animal Tissues. Proof of Differential Action. S. Russ.—p. 637.
*Traumatic Intestinal Rupture. G. Massie.—p. 640.
*Case of Complete Decerebrate Rigidity in Man. F. M. R. Walshe.—p. 644.
*Relation Between Growth Promoting and Antirachitic Functions of Certain Substances. H. Goldblatt and S. S. Zilva.—p. 647.
Prenatal Care and Puerperal Mortality. A. L. Robinson.—p. 649.
Diathermy Treatment of Gonorrhea in Women. A. E. Milner and A. K. McClachlan.—p. 652.

**Effect of Roentgen Rays of Different Wave Lengths on Tissues.**—The results of Russ' experiments show that when equal amounts of roentgen-ray energy are absorbed from beams of different wave lengths by animal tissues, the reactions of these tissues may differ considerably in degree and possibly to some extent in nature. The experiments show that a bigger differential effect between "hard" and "soft" rays exists for skin than for tumor cells—an argument for the use of very hard roentgen days or gamma rays when

tumors at a considerable depth below the skin have to be irradiated. The conclusion would, perhaps, be just the reverse in superficial conditions not involving the irradiation of normal skin. The result also raises the question whether the specification which has been adopted by Seitz and Wintz for expressing the carcinoma dose in terms of the skin dose is sufficiently rigorous, for this may be a function of the wave-length. The two main results obtained are that about six times as much short wave-length energy as long wave-length energy must be expended in a layer of skin in order to produce equal reactions and that this factor falls to about 2.6 in the case of the tumor.

**Traumatic Intestinal Rupture.**—Thirty-four cases of intestinal rupture, without penetration of the abdominal wall are reviewed by Massie. The majority of ruptures (twenty-six) occurred in the small intestines. The comparative immunity of the stomach; the duodenum, and the colon is striking. The jejunum was more commonly injured than the ileum, and of the fourteen jejunal lesions, seven were found within eighteen inches of the duodenojejunal junction. Of the ruptures of the duodenum, two showed complete transverse division, and all were associated with other severe injuries in the upper abdomen. In the small intestine the majority of the lesions were partial ruptures; that is, the continuity of the bowel was not completely divided, although all its coats were involved. Of the nine cases of complete transverse division, seven were in the jejunum and two were in the ileum. It is noteworthy that whereas all the cases of rupture of the stomach and of the duodenum were complicated by other injuries, usually intra-abdominal, the cases of rupture of the small intestine, with the exception of two, were uncomplicated by any such injury. The lesion was usually single. Five cases occurred in which there was a double lesion. In these, the perforations were usually close together, although in one case they were separated by a distance of five feet. In many of the cases of multiple perforation of this kind already reported the patient had been kicked by a horse, and it has been suggested that these injuries were due to the impact of the two ends of the hoof. In only one of the five cases in this series was the injury due to a kick; in another the patient was crushed between the buffers of a train. No one sign or symptom can be regarded as in any way diagnostic of the condition in its early stages. In nearly all the cases the predominating feature at the time of admission was pain, shock, or rigidity of the abdomen. Of the thirty-four cases, three patients refused operation. Of the number operated on seven recovered and twenty-four died—a mortality of nearly 78 per cent. No patient with rupture of the stomach or duodenum recovered; this is accounted for by the fact that injury to these structures was in each case complicated by some other severe laceration, usually intra-abdominal. Of the fifteen cases of injury of the jejunum, one case refused operation, and of the remaining fourteen five recovered. Of the eight cases of rupture of the ileum, one patient also refused operation, and of the remaining seven patients two recovered. There does not appear to be, therefore, any great difference in the mortality of ruptures of the jejunum and ileum respectively. In all the successful cases with the exception of one in which Murphy's button was used, simple suture of the rupture was the only surgical procedure necessary. In the three cases in which resection was undertaken the patient died. In only one case was enterostomy performed, and in this case also the patient died. The shock always associated with intestinal rupture, if at all severe, tends to become worse as time goes on, and offers almost insuperable difficulty in the treatment of these cases. In extreme cases the patient dies, even after an early and otherwise successful operation, while in its less severe degrees it obscures the whole clinical picture and masks the onset of peritonitis.

**Decerebrate Rigidity in Man.**—In Walshe's case not only was the hypertonus physiologically identical with that described by Sherrington, but there were present Magnus and de Kleijn's tonic neck reflex and also a form of interaction between tonic and phasic reflexes, both of which are a normal accompaniment of the rigidity in animals. Further, the clinical picture was free from complication by those irregularities of respiratory and cardiac activity and by tonic fits, which are in all probability due to gross disturbances in the blood supply of the brain stem, and are not part of true decerebrate rigidity. A detailed report of the case is given.

**Effect of Heat on Growth Promoting and Antirachitic Substances.**—In the experiments reported by Goldblatt and Zilva, an attempt was made: (1) to ascertain whether the inactivation of the growth-promoting and antirachitic functions by heat in the presence of air proceeded at the same rate. For this purpose cod liver oil was investigated. (2) To determine the quantitative distribution of the alleged two factors. For this a substance different in character from cod liver oil, such as spinach, was employed. It was learned that the growth-promoting and antirachitic properties of cod liver oil are inactivated at different rates by heat in the presence of air. There is a very great disparity between the growth-promoting and the antirachitic potency of spinach. A certain sample of hardened cod liver oil had been found to possess high growth-promoting and antirachitic activity. These observations give further support to the hypothesis of McCollum, Simmonds, Shipley and Park that the antirachitic and the fat soluble A factors are different principles.

## Medical Journal of Australia, Sydney

**2:** 217-242 (Sept. 1) 1923

Roentgen Ray Treatment of Skin and Its Appendages. F. J. Stansfield. —p. 217.
Supracondylar Fracture of Humerus Treated by Hook Extension. A. J. Cunningham.—p. 229.

**2:** 243-266 (Sept. 8) 1923

Congenital Hypertrophy of Pylorus: Surgical Treatment. R. M. Downes.—p. 243.
Notoedres Cati: Its Possible Transmission to Man. I. C. Ross.—p. 246.
Middle-Aged Man in Love: Henri Quatre. C. MacLaurin.—p. 249.
Postoperative Acidosis. M. C. De Garis.—p. 254.

**2:** 267-290 (Sept. 15) 1923

Tonsil from Point of View of Physician. C. B. Blackburn.—p. 267.
Treatment of Tonsils and Adenoids. W. C. Mansfield.—p. 269.
Indications for Treatment of Tonsils and Adenoids. W. Vickers.—p. 270.
Mongolian Idiocy. W. A. T. Lind.—p. 272.
Acute Leukemia. G. C. Willcocks.—p. 278.

**2:** 291-328 (Sept. 22) 1923

Treatment of Typhoid by Intravenous Administration of Vaccines. K. D. Fairley.—p. 291.
Primary Blastomycotic Meningitis Occurring in a Child. D. L. Barlow. —p. 302.

## Practitioner, London

**111:** 173-240 (Sept.) 1923

Chronic and Rare Forms of Suppuration in Breast. D. C. L. Fitzwilliams.—p. 173.
Artificial Pneumothorax. F. G. Chandler.—p. 187.
Investigation of Prognostic Significance of Urinary Permanganate Reaction in Pulmonary Tuberculosis. Z. P. Fernandez.—p. 195.
Dental Sepsis in Dermatology. H. C. Semon.—p. 199.
Chronic Urticaria in Adults. G. H. Lancashire.—p. 206.
Home Treatment of Internal Hemorrhoids. C. E. Shelly.—p. 211.
Enlarged Tonsils and Adenoids. B. V. Dunn.—p. 222.

## South African Medical Record, Cape Town

**21:** 389-412 (Sept. 8) 1923

Treatment of Cholecystitis and Gallstones. Surgical Anatomy of Gallbladder. L. Bordon.—p. 390.
Transverse Incision: Plea for Caution. H. A. Moffat.—p. 391.
Indications for Operation. P. M. Daneel.—p. 392.
When to Operate. C. F. M. Saint.—p. 392.
Surgery of Bile Ducts. C. C. Elliott.—p. 394.
Conservatism in Surgical Treatment for Gallstones. T. L. Sandes.—p. 396.
Treatment from Outpatient Surgeon's Point of View. L. B. Goldschmidt. —p. 397.
Case of Double Pyelitis (B. Coli Infection). E. B. Fuller.—p. 399.

## Archives Franco-Belges de Chirurgie, Brussels

**26:** 527-614 (June) 1923

*Sarcomas of Bones. L. Tavernier.—p. 527.
*Epidural Injections. A. Hannecart.—p. 540.
Treatment of Displacement of the Spleen. A. Hannecart.—p. 550.
Trephining Over the Cerebellum. P. Martin.—p. 557.
Good and Bad Ankylosis. Delchef.—p. 575.
*Treatment of Grave Ankylosis. De Munter.—p. 578.

**Diagnosis of Sarcoma in Bones.**—Tavernier asserts that roentgenography is sometimes more instructive than microscopic examination of an excised fragment in distinguishing

between malignant disease of the bone and an ordinary mild inflammatory process. The statement that the epiphysis is never attacked by malignant disease is disproved by one of his cases in which the epiphysis of the femur was the site of a metastatic sarcoma. Acute osteomyelitis usually shows light patches in the roentgenogram, and the bone is less opaque than normal bone. The impression is more of multiple foci than with sarcoma. But he reproduces three atypical cases in which sarcoma presented a multiple foci appearance, with hyperostosis suggesting syphilis. Small irregular erosions of the anterior margin of the bone were accepted as excluding syphilis. In one case the sarcoma had invaded the entire femur without much enlargement of its diameter. Twenty-seven roentgenograms of atypical cases are reproduced. Osteosarcomas may form new bone but they never induce a reactional formation of new bone in adjacent normal bone, as in osteomyelitis.

**Epidural Injections.**—Hannecart relates that sciatica permanently subsided in the eleven cases treated by epidural injection of about 150 c.c. of physiologic saline solution. Similar relief was obtained in cases of pains in the leg after trauma or childbirth. One man had been incapacitated for three weeks by pain in the ankle. The epidural injection cured it at once. Two of the patients with sciatica had a recurrence five or six months later which yielded anew to the epidural injection. In one case pain and swelling of the malleolus had recurred at times for more than five years, and finally continuous lancinating pains totally incapacitated the man. All kinds of treatment had been applied without relief, until epidural injection of 200 c.c. cured the pains, the swelling subsided, and the purplish, tender skin became normal. Except for the old ankylosis, the cure was complete. Rebellious multiple and painful varicose ulcers on the leg of one woman healed over gradually after the epidural injection, the largest ulceration, measuring 3.4 cm., had subsided to 0.6 cm. in less than a month and clinically normal conditions were restored before the end of the second month. The epidural injection in these last two cases had evidently modified trophic and vascular conditions. The injection begins to be painful after 30 or 40 c.c. have been introduced, but he continues to the bearable limit, from 100 to 200 c.c. or even 240 c.c. A local anesthetic might be injected beforehand. Experiments on the cadaver have shown that the foramina act as safety valves, but it is wise to inject the fluid slowly after 50 c.c. His experience with epidural anesthesia has also been favorable. He thinks that with perfected technic we may be able to inject the entire epidural space and thus anesthetize all the spinal nerves. The conservation of the motor function with the epidural technic, and the noninclusion of the pneumogastric insure noninterference with the respiration.

**Treatment of Crippling Ankylosis.**—Munter describes his method of forcible mobilization of grave ankylosis of joints, supplemented by gentle manipulation.

## Bulletins de la Société Médicale des Hôpitaux, Paris

**47**: 729-768 (May 25) 1923

*Bilateral Artificial Pneumothorax. P. Ameuille.—p. 729.
*Chronic Syphilitic Rheumatism. H. Dufour et al.—p. 732.
Portable Standard Manometer. C. Laubry.—p. 735.
*Antisyphilitic Measures in Morocco. J. Comby.—p. 736.
*Differential Diagnosis of Endocarditis. Routier and Walser.—p. 743.
Thrombosis of the Portal Vein, with Perihepatitis. J. Hatzieganu and P. Shiirteu.—p. 747.
Thrombocytopenia with Hemolytic Jaundice. J. Hatzieganu and Petvi. —p. 751.
*Pneumothorax in Interlobar Pleurisy. A. Pellé.—p. 754.
*Pneumococcus Meningitis. Hallé.—p. 757. Idem. Netter and Césari. —p. 763.

**Two Cases of Bilateral Artificial Pneumothorax.**—In the two cases which Ameuille describes in detail, the first lung affected had practically healed, but the gas had not all been absorbed when he produced a pneumothorax on the other side, in which the lung had developed a tuberculous process.

**Syphilitic Polyarticular Arthritis Deformans Treated with Bismuth.**—Dufour, Duchon and Durand report a case in which bismuth treatment produced favorable results. The woman, aged 42, entered the hospital Jan. 17, 1923, with chronic rheumatism of the shoulders, wrists, knees, ankles, hip joints, fingers, toes, neck and jaw. The rheumatism had started in the finger joints six years before, and rapidly became general and chronic. Neo-arsphenamin had been the only drug that gave relief, but this was discontinued because of intense albuminuria. The Wassermann reaction had in turn been positive and negative. She was given a course of ten bismuth injections. As a result, spontaneous pain has disappeared, pain on pressure is less intense, and the joints, especially the knees, have lost their stiffness. This syphilitic, deforming, chronic polyarthritis usually appears in youth or in the period of the menopause in women. It is frequently mistaken for tuberculosis when localized in one joint. If specific treatment is given in time, the chances for cure or great improvement are good. The osteitis tends to atrophy rather than to hyperostosis.

**Campaign Against Syphilis in Morocco.**—Comby says that estimates by physicians in Morocco of the prevalence of syphilis among the natives vary between 50 and 90 per cent. of the total population. Cutaneous, bone, joint and liver lesions are common; general paralysis is rare, and tabes appears only among the Europeans. Injections of arsphenamin and neo-arsphenamin have proved successful among the natives. The first two antivenereal disease dispensaries were founded in 1916, and the natives flock to them, especially the pregnant women.

**Differentiation of Slow Endocarditis from Subacute Tuberculosis.**—Routier and Walser say that the possibility of infectious endocarditis lenta must not be excluded in septicemia, even without apparent cardiac localization. Even when heart symptoms exist or develop, this does not prove that the condition is endocarditis. In one woman, aged 52, the diagnosis of endocarditis seemed to be certain though two blood cultures at intervals of a week were negative. Necropsy revealed only caseous infiltration of the lungs and pleural adhesions.

**Pneumothorax Treatment of Interlobar Pleurisy.**—Pellé's patient, aged 15, during the first five months showed symptoms similar to those of pulmonary tuberculosis; during the second stage a vomica occurred twice. This together with the absence of tubercle bacilli from the sputum, determined the diagnosis of interlobar pleurisy. The serious general condition contraindicated surgical intervention. An artificial pneumothorax soon arrested the development, and recovery followed.

**Purulent Pneumococcus Meningitis.**—Hallé reports a case in a young man with recovery, and Netter and Césari report the recovery of a child, both presenting severe meningitis, under treatment with serotherapy and a fixation abscess. The pus of the turpentine abscess contained the antigens of the pneumococcus. The mortality of pneumococcus meningitis has averaged 92.9 per cent. in the forty-two cases previously published in the *Bulletin*, and Netter has had only six patients recover in his sixty cases. The multiplicity of the localizations of the pneumococcus and its rapid proliferation hamper the effect of serotherapy as a rule.

## Paris Médical

157-188 (Sept. 1) 1923

Ophthalmology in 1923. F. Terrien.—p. 157.
Attitude of Head with Certain Visual Disturbances. Cantonnet.—p. 167.
Wernicke's Reaction. G. Cousin.—p. 168.
Otorhinolaryngology in 1923. Dufourmentel.—p. 169.
Practical Advice on Tracheotomy. P. Sebileau.—p. 174.
Stomatology in 1923. P. Fargin-Fayolle.—p. 177.
Treatment of Facial Paralysis. G. Bourguignon.—p. 184.
*Canities and Dental Irritation. Raison.—p. 187.

**Canities in Relation to Dental Disease.**—A possible relation between the turning white of the hair and dental disturbances is illustrated by Raison, who tells of three cases of canities closely following dental irritation. The first case was that of a man, aged 29, who suddenly developed a patch of gray hair in the region of the vertex after an injury to the skull and dental irritation. The second case was in a man, aged 25, with a patch of white hair on the right temple. It had developed immediately consecutive to alveolitis after extraction of the right upper premolar. The third case was in a medical

student, aged 31, who developed gray patches on the chin and upper lip after the nerve had been killed in the lateral incisor and first premolar teeth on that side.

## Presse Médicale, Paris

**31:** 761-768 (Sept. 5) 1923

*The Sympathetic Factor in Worry. M. Laignel-Lavastine.—p. 761.
*Arthritis of Hip Joint in Infants. Lamy and Benoiste-Pilloire.—p. 762.
Biologic Diagnosis of Echinococcus Disease. P. F. Ithurrat and B. N. Calcagno.—p. 765.

**The Nervous Element in Worry.**—Laignel-Lavastine incriminates the sympathetic as an important factor in emotional instability, restlessness, and morbid apprehensions, and here explains the anatomic and physiologic bases for this assumption.

**Hip Joint Disease in Infants.**—Lamy and Pilloire show by concrete examples that a suppurating process in the hip joint may induce secondary luxation from wearing off part of the femoral head or neck, or from primary destruction of the head, or from separation of the epiphysis after the head in the acetabular focus had been resorbed. Simple puncture alone may cure pneumococcus arthritis of the hip joint in an infant. Continuous extension during the acute phase tends to prevent true luxation, and to limit the intensity of the processes. The pseudoluxations from destructive processes should be treated like true luxations; the stump of the neck restored to the acetabulum aids in regeneration of the bone. The differential diagnosis is facilitated by the absence of the epiphyseal protuberance on the upper inner end of the neck, compared with the sound side, and the normal outline of the socket cavity.

## Revue Française d'Endocrinologie, Paris

**1:** 185-280 (July) 1923

*Suprarenals and Cholesterol. G. Laroche.—p. 185.
Infantilism Due to Leprosy. G. Delamare.—p. 208.
*Endocrines and Development of Batrachians. P. Remy.—p. 220.
*Endocrine Derangement Traceable to Helminths. P. Simonin.—p. 238.

**Suprarenals and Cholesterol.**—Laroche reviews the literature on cholesterol content of the suprarenals, and concludes that the cortical substance of these glands produces cholesterol and regulates its content in the blood.

**Endocrines and Development of Batrachia.**—Remy reviews the experiments on the action of different endocrine glands and of iodin on the metamorphosis of tadpoles.

**Endocrine Derangement Traceable to Helminths.**—Simonin reviews the clinical and experimental facts on the influence of helminthiasis on the endocrine glands. Almost every gland may be disturbed. Infantilism, abortions, and disturbances of menstruation may result.

## Scalpel, Brussels

**76:** 937-960 (Aug. 25) 1923

*Diverticulum of the Anterior Urethra. Beyer.—p. 937.
Advantages of Extended Pyelotomy. J. De Smeth.—p. 941.
Surgical Treatment of Atrophic Rhinitis. L. Van den Wildenberg.—p. 944.

**Acquired Diverticulum of the Anterior Urethra.**—Beyer reports the case of a house painter, aged 63, with a secondary urethrocele which developed in three weeks after a fall. There was no history of gonorrhea or calculi, but the cavity soon became infected. The disturbances were bearable for three years, and then Beyer resected the walls of the diverticulum after internal urethrotomy, reconstructing the urethra with the walls of the diverticulum over a retention catheter. Clinically normal conditions were restored at once and apparently permanently. Denk has collected thirty-three cases, several congenital. In several a fistula was left in the perineum. It might be safer to divert the urine beforehand, but Beyer's patient healed promptly and completely without this.

## Schweizerische medizinische Wochenschrift, Basel

**53:** 745-768 (Aug. 9) 1923

Acute Occupational Mercury Poisoning. M. Winkler.—p. 745.
Roentgen Treatment of Mammary Cancer. H. E. Walther.—p. 747.
*Treatment of Heart Disease in Switzerland. F. Kornmann.—p. 752.
Primary Sarcoma of Mesentery. B. Waser.—p. 755.

**Contraindications for Treatment of Heart Disease in Switzerland.**—Kornmann emphasizes the danger of sending to mountain health resorts patients with severe heart disturbances, and likewise those who suffer from a "latent anxiety." This does not mean the well known sensation in angina pectoris; it is the anxiety that develops in the course of cardiac disturbances, and makes the patient feel best when he is at home. This latent anxiety is a manifestation of the deficient circulation in the brain.

## Policlinico, Rome

**30:** 1057-1087 (Aug. 13) 1923

Pancreatic Ferments in Stools. U. Carpi.—p. 1057.
*Pediatrics and Medical Prejudices. A. Gismondi.—p. 1059.
Calculus in the Prostate. E. Sciaky.—p. 1061.
Bladder Calculus from Foreign Body. A. Sartogo.—p. 1062.
Pseudosigmoiditis in Bladder Disease. Licini.—p. 1062.
*Fistulas from Foreign Body in Bladder. G. Brendolan.—p. 1064.
Rapid Bacteriologic Diagnosis of Diphtheria. G. Pecori.—p. 1066.
Circular Surgical Saw. G. Galata.—p. 1067.

**Pediatrics and Medical Prejudices.**—Gismondi shows the fallacy of the frequent diagnosis "intestinal (or gastric) fever." Only the typhoid group belongs here. Other fevers of intestinal origin (gastro-enteritis, dysentery) cause marked local symptoms. The favorable action of a laxative does not exclude the possibility of an affection of the tonsils. The middle ear may be diseased, and a diagnosis based on the fever and coated tongue alone would mislead. Examination of the urine reveals sometimes a pyelonephritis in a supposed "intestinal fever." Tuberculosis and septicemia are to be considered also.

**Fistulas from Hairpin in Bladder.**—Each point of the hairpin had perforated the wall, so that two vesicovaginal fistulas required operative correction.

## Riforma Medica, Naples

**39:** 697-720 (July 23) 1923

Scarification Method of Tuberculin Treatment. P. Rondoni.—p. 697.
Complement Fixation in Diagnosis of Tuberculosis. N. Parise.—p. 699.
*Thrombopenia in Anaphylaxis. C. Piana.—p. 702.
Acute Bilateral Purulent Pleuritis. L. Andrenelli.—p. 705.
Poisonous Snake Bites in Italy. M. Gioseffi.—p. 706.

**Thrombopenia and Accumulation of Platelets in Liver in Anaphylaxis.**—Piana found that the liver of guinea-pigs retains large quantities of blood platelets in an anaphylactic shock.

**39:** 721-744 (July 30) 1923

*Noncoagulable Blood Nitrogen and Muscular Exertion. G. Aiello.—p. 721.
*Blood Platelets During Hemoclastic Crisis. F. Cattopetti.—p. 722.
Case of Polyglandular Syndrome with Celiac Neurosis. N. Valobra.—p. 723.
Inexpensive Heliotherapy in Tuberculosis. Ottolenghi.—p. 728.

**Noncoagulable Blood Nitrogen and Muscular Exertion.**—Aiello found a transitory increase of 20 per cent. in the average after muscular exertion under normal working conditions. There was no relation between blood pressure and nitrogen content.

**Platelets in Blood During Hemoclastic Crisis.**—Cattapetti observed diminution of the number of blood platelets in the circulating blood in every case of "hemoclastic crisis." The phenomenon starts later and progresses slower than the leukopenia.

**39:** 769-792 (Aug. 13) 1923

*Anaerobic Germs in Otology. P. Brisotto.—p. 769.
*Anatomy and Histology of Heat-Stroke. A. Fabris.—p. 775.
Histology of Tissues Inoculated with Tuberculous Toxin. I. O. Saggioro.—p. 781.
Bronchophonia in Pleurisy with Effusion. R. de Battisti.—p. 782.

**Anaerobic Germs in Otology.**—Brisotto examined thirty-five otologic cases and twenty cases of atrophic rhinitis bacteriologically. Among other findings he noted that no anaerobes would grow from the pus of his cases of mastoiditis which were caused by an acute otitis. If the otitis was chronic, both the pus from the mastoiditis and from intracranial complications contained anaerobic germs.

**Anatomy and Histology of Heat Stroke.**—Fabris had occasion to perform necropsies on twelve typical and seven less pure cases of heat stroke. He publishes the details of the pathologic findings.

## Gaceta Médica de Caracas

**30:** 193-208 (July 15) 1923

*Spirochetal Bronchitis in Venezuela. J. R. Risquez.—p. 193. Cont'd.
Medical Geography of Guarigo District. H. Landaeta.—p. 197. Conc'n.

**Spirochetal Bronchitis in Venezuela.**—Rísquez has succeeded in discovering seventy-six cases of spirochetal bronchitis at Caracas. The search for the spirochete, the clinical picture, and the treatment are discussed in detail. He found a number of cases in which tuberculosis had been diagnosed, but intravenous antimony treatment restored the patients to health, thus correcting the diagnosis. The first case reported in Venezuela was in 1919, and since then only eight cases had been published when he began, six months ago, to search for cases in the tuberculosis sanatoriums and elsewhere, and thus rounded up seventy-six cases.

## Prensa Médica Argentina, Buenos Aires

**10:** 1-36 (June 10) 1923

*Protracted Slight Fever. G. Aráoz Alfaro.—p. 1. Conc'n.
*Functional Gastric Achylia. C. Bonorino Udaondo.—p. 5.
*Amputation of the Forearm. G. Bosch Arana.—p. 11.
*Spirochetal Bronchitis. J. E. Carulla, M. Besimsky and L. Sanguinetti.—p. 16.
Drainage in Surgery. G. Zorraquín.—p. 20.
Semeiology of the Female Urethra. F. Pérez del Cerro and P. Gonzalez.—p. 26.
Experimental Research on Cerebral Localization. Rodriguez Lafora.—p. 32.

**Protracted Slight Fever.**—Aráoz Alfaro remarks that it is humiliating when we are unable to explain the cause of slight fever that persists tenaciously in spite of treatment, but this sometimes happens, especially in children and women. Sometimes this fever is observed after convalescence from an acute infectious disease, but the probability is that it had preceded the infection. Tuberculosis may usually be excluded when the temperature does not rise after physical exertion. In some cases the slight hyperthermia may subside for a few days or weeks, and then return as tenaciously as before. The patient may feel in perfect health throughout, but generally there is slight malaise, especially in periods of exacerbation during the menses or after physical exercise or emotional stress. He is convinced that temperatures of 37.1 or 37.2 C. in the axilla, 37.3 in the mouth and 37.6 in the rectum may be regarded as physiologic, either congenital or acquired, in certain persons.

**Functional Gastric Achylia.**—Bonorino tabulates the findings and course in eleven cases of constitutional achylia and in eight in which the achylia was evidently of nervous origin. This latter group included three cases of tabes, and gastric secretion was normal during the intervals of the crises. In the functional cases, intestinal function was normal, in marked contrast to the gastrogenous diarrhea common with organic achylia. Treatment of the functional type should be hygienic with measures to aid digestion only when needed. Acquired neurogenous achylia is generally transient. In the constitutional form there are usually other signs of general asthenia.

**The Radio-Ulnar Cleft Method of Amputation of the Forearm.**—Bosch Arana discusses the technic which gives the best results with the method of amputation which slits the forearm to utilize the radius and ulna like the tines of a long fork or rather the jaws of forceps. An illustration shows a man feeding himself, the spoon held naturally in the long cleft in the forearm.

**Spirochetal Bronchitis.**—The man had been presenting symptoms of chronic bronchitis for four years before the sputum became hemorrhagic and Castellani's spirochetes were discovered. He is now improving under arsphenamin.

**10:** 65-96 (June 30) 1923

*Bone Implants in Pott's Disease. R. E. Pasman.—p. 65.
Treatment of Visceral Syphilis. J. L. Carrera.—p. 80. Conc'n, p. 108.
French System of Welfare Work for Infants. S. Mazza.—p. 84.
Infection of Broad Ligament. R. Beranger and J. Viola.—p. 87.
Hemorrhagic Uterine Disease. O. H. Senet and P. B. Landabure.—p. 93.

**Bone Implants in Treatment of Tuberculous Spondylitis.**—Pasman gives the detailed history of 23 of the 26 cases in which he applied Albee's technic. His operative mortality was 8 per cent. He agrees that this method of treatment is not adapted for children; in any event, for children under 5. The implant was absorbed in from two to four months in 3 of the 6 children, and one of the other children died. The outcome was extremely favorable in 15 cases, and there was considerable improvement in 4 other cases; 2 are "lost cases."

**10:** 181-204 (Aug. 10) 1923

*Tuberculosis of the Bones of the Foot. Celesia A. F.—p. 181.
*Bacteriologic Examination of Water. M. V. Carbonell and E. Fynn.—p. 184.
*Traumatic Ossifying Myositis. E. Cornejo Saravia and A. Buzzi.—p. 186.

**Tuberculosis of the Bones of the Foot.**—Celesia comments on the almost invariable failure of heliotherapy and other nonsurgical measures in tuberculous lesions of the tarsus or metatarsus. The disturbances are ascribed to rheumatism or other cause until the affection is too far advanced for medical measures alone. He describes a case in which he curetted the foci in the foot in 1919, and again in 1920. The patient dated the lesion from a fall from a horse in 1917; her entire weight on striking the ground had been borne by this foot.

**Bacteriologic Examination of Water.**—Carbonell and Fynn commend as simple and rapid a test for colon bacilli based on the production of sulphureted hydrogen in bouillon containing 1 per cent. peptone. A strip of blotting paper impregnated with a solution of lead acetate is suspended in the test tube, just above the fluid, and this turns a dark color as the hydrogen sulphid is generated. Parallel tests with other technics confirmed the reliability of this method with 1 c.c. of water and even with 0.1 in some specimens. The method can be used also in testing milk.

**Ossifying Myositis.**—In Schulz' collection of 296 cases, a single severe trauma was known in 232, and this had occurred in the case described here. Cornejo Saravia and Buzzi remark that there is generally a history of dislocation of a joint, and in the majority the elbow and the brachialis muscle are involved. The tumor becomes hard in parts by the third week to the third month. The prognosis is graver, the earlier the ossifying process occurs. It reaches its height by the third month, and then tends to diminish in size while becoming denser. They warn that it is necessary to wait before operating until the osteoma is well defined, encapsulated, as it were, and independent of the skeleton. The operation must leave no hematoma as this would invite recurrence. Even at the best, recurrence is frequent.

**10:** 229-252 (Aug. 30) 1923

*Associated Infection with Pulmonary Tuberculosis. F. Bezançon and M. Chevalley.—p. 229.
Drainage in Acute Empyema. C. I. Allende.—p. 231. Cont'd.
Serologic Variations of Paratyphoid A Bacillus. A. Bachmann and J. M. de La Barrera.—p. 239.
*Hyperostosis of Upper Jaw. R. Podestá.—p. 241.

**Associated Infection in Pulmonary Tuberculosis.**—The data presented from fifty-eight cases of tuberculosis confirm the insignificant share of secondary infection in formation of cavities and in hectic fever. Consequently there is little basis for systematic vaccine therapy in pulmonary tuberculosis.

**Symmetrical Hyperostosis of Upper Jaw.**—Podestá compares with the case he describes the few similar cases on record. The affection is not osteitis fibrosa but merely the transformation of the bone marrow into a fibrous tissue. Although syphilis seems to be a factor in its development, specific treatment has no influence on the hyperostosis. It obstructed the nasal passages in his case, compelling intranasal resection.

## Repertorio de Medicina y Cirugía, Bogota

**14:** 295-334 (May) 1923

The Present Status of Prostatectomy. Hipolito Machado L.—p. 298.
*The Bucaramanga Epidemic. D. Peralta et al.—p. 301.

**14:** 335-374 (June) 1923

The Medical Practice Law in Colombia. J. M. Montoya and J. Manrique.—p. 335.
Vasotomy or Belfield's Operation. R. Zapata.—p. 344.
*The Bucaramanga Epidemic. F. Lleras Acosta et al.—p. 356.

**The Bucaramanga Epidemic.**—This article is signed by eight physicians of Bucaramanga, and presents an epitome of their experiences in this present epidemic, which they say is yellow fever. The disease resembles in every respect an epidemic in

1910 and 1911 with 341 deaths. The mortality in the present epidemic has been only 15 per cent.; 80 per cent. of the 200 cases known have been mild. Treatment has been with an alkaline laxative (Seidlitz) and an intravenous injection of 0.3 gm. of neo-arsphenamin given as soon as the case is diagnosed, regardless of the temperature. The benefit from the neo-arsphenamin has demonstrated its fundamental value. Since the epidemic of 1911, dengue has appeared in the region, and the eight physicians are inclined to accept a connection between yellow fever and dengue. Several features in common and the transmission of both by the same species of mosquito suggest a kinship, like that between the different types of malaria plasmodia. The following number of the *Repertorio* publishes the report of three physicians from Bogota who accompanied the committee sent by the Rockefeller Foundation to study the epidemic. The diagnosis of yellow fever was confirmed at once. The serum constantly agglutinated the cultures of the yellow fever leptospira and failed to agglutinate the spirochetes of infectious jaundice.

## Revista de la Asoc. Méd. Argentina, Buenos Aires

**36:** 69-281 (May-June) 1923

*The Snake Venom Supply. B. A. Houssay.—p. 69.
Polyvalent Antiserum for Gangrene. A. Sordelli.—p. 82.
*Changes in Teeth on Deficiency Diets. J. J. Bracco.—p. 86.
*Antiserums for Snake Poison. B. A. Houssay and J. Negrete.—p. 98.
*Mistaken Sex. C. L. García.—p. 117.
Reconstruction Surgery. O. Ivanissevich.—p. 197.
Actinomycosis of the Abdomen. N. Tagliavacche.—p. 203.
The Fight Against Tuberculosis in Germany. G. Bosco.—p. 217.
Development of White Rat on Milk Diet. E. Fynn.—p. 235.
Prophylaxis of Tuberculosis in Infants. J. P. Garrahan.—p. 248.
*Anastomosis of Facial Nerve. M. Alurralde and C. T. Allende.—p. 259.
Case of Wilson's Disease. R. Chiappori and I. Hernández.—p. 267.
Case of Bulbospinal Myasthenia. R. Chiappori.—p. 271.
Increase in Insanity in Argentina. A. Ameghino.—p. 275.

**Supply of Snake Poison in Argentina.**—Houssay says that in the last four years about 3,000 extractions of snake venom have been made at the official institute. Different species of lachesis have yielded up to 200 and 470 mg. of venom at a time (dried). The monthly yields are much smaller in winter.

**Changes in Teeth of Rats on Deficiency Diets.**—Bracco's experiments confirmed the defective deposits of calcium, and the irregular growth of predentin in the nine rats on a deficiency diet (McCollum's 2,911), compared with five controls. No signs of decided rickets were found when the animals were killed in 109 days.

**Specific Action of Antivenins.**—Houssay and Negrete deny any specific action from the antivenins in respect to venoms from another country, even from the same species of snakes. The antivenins are potently specific for the venoms from which they are prepared, and have some neutralizing action on kindred species from the same continent. The action is still less on species not closely akin.

**Mistakes in Sex.**—Lagos García describes the various deformities that result from lack of the anterior urethra in male infants which mislead the decision as to the sex. In his twenty years of study of cases of pseudohermaphroditism and mistakes in sex, the subjects were always males. He gives an illustrated description of the eleven cases in this category he has encountered. Vulviform penoscrotal hypospadias is a puzzling type. One child, aged 5, seemed to be a well formed healthy girl, except for a hernia. The contents of the hernia proved to be a testis, and the cremaster reflex could be elicited. Nothing resembling a uterus or ovary could be discovered. He removed the ectopic testis. In another case of masculine pseudohermaphroditism, the child, aged 4, developed precocious puberty, and died at 8 from measles. In some of the cases only a laparotomy cleared up the sex.

**Anastomosis of Facial Nerve to Correct Contracture.**—The contracture complicating paralysis of the left inferior facial nerve was combated by anastomosis of the nerve. The benefit lasted only for five months; then further slight contracture developed in the region innervated by the severed trunk nerve.

## Semana Médica, Buenos Aires

**1:** 989-1028 (May 24) 1923

*Kidney Tumors. C. A. Castaño and A. J. Risolia.—p. 993.
*Anal Fistulas. A. Zeno and C. Piola.—p. 1006.
*Extra-Uterine Pregnancy Near Term. S. E. Bermann.—p. 1008.
Biologic Relativity. A. Mary.—p. 1010.

**Kidney Tumors.**—Six were hypernephromas in a recent series of 7 cases of kidney neoplasms in Castaño's experience. In 3 of the hypernephroma cases there had been no symptoms from the urinary apparatus, but there had been fever and chills in 2 cases, and irregular fever alone in one. The fever may appear early, and be the only symptom for a time, with or without free intervals. In one case hydatid cyst of the liver and in another perinephritic abscess had been the diagnosis. The fever always subsided after the nephrectomy. Only the 4 patients, aged from 43 to 63, presented hematuria. The 3 free from urinary symptoms were between 18 and 35. The tumor was palpable in 6 cases, and in 4 there had been pain from the first, intense and immobilizing in one case. The general condition remained good throughout; glycosuria was pronounced in one case, but disappeared after the operation. Two of his 7 patients died from operative shock; the tumor had proved inoperable in one of these cases. The others are in good health to date, but metastasis several years later is common with these tumors. He adds that functional tests of the kidneys are superfluous, as hypernephroma is inevitably fatal unless removed.

**Anal Fistula.**—Zeno and Piola state that the fistula was of tuberculous origin in 9 of their 125 operated cases in the last eight years, and the outcome of the operation was only mediocre in this tuberculous group. They excised the fistula into sound tissue, and sutured the walls of the resulting cavity together to wall off the rectum in all but 14 cases.

**Extra-Uterine Pregnancy at Term.**—In the case illustrated by Bermann, the nine months' child lived two hours after extraction from the left tubo-abdominal fetal cyst with two placentas. Internal hemorrhage had compelled the emergency laparotomy. This is the sixth case of extra-uterine pregnancy at term that has been published in Argentina.

**1:** 1149-1188 (June 21) 1923

*Benign Periurethral Tumors. F. E. Grimaldi.—p. 1149.
Hemorrhagic Pancreatitis in Dogs, Induced with Snake Venom. C. Preioni.—p. 1176.
Mortality in Colony of Insane. F. Gorriti.—p. 1180.

**Benign Periurethral Tumors.**—Grimaldi insists that this is the proper term for what is usually called hypertrophied prostate. Treatment should be based on this conception, and the Freyer operation is the only technic that allows radical removal of the tumor. The outcome depends on the care before and after the operation.

## Deutsche medizinische Wochenschrift, Berlin

**49:** 1005-1038 (Aug. 3) 1923

Insulin Treatment. H. C. Hagedorn.—p. 1005.
*Treatment in Disease of Coronary Arteries. Guggenheimer.—p. 1007.
Ponndorf's Vaccination. E. Hassencamp.—p. 1010.
*Hydrogen Ions and the Blood Vessels. Atzler.—p. 1011.
*Lumen of Pores in Filters. A. Einstein and H. Mühsam.—p. 1012.
Mediastinal Pleuritis and Its Roentgen Picture. Brieger.—p. 1013.
*Positive Wassermann Reaction During a Staphylococci Sepsis. A. Storp.—p. 1014.
Cholesterol-Free Meinicke Test for Syphilis. H. Deicher.—p. 1015.
Scleroses in Territory of Pulmonary Artery. P. Engelen.—p. 1015.
Action of Some Antiscorbutic Foods. E. Nassau and O. Meyer.—p. 1016.
Chronic Ulcer of Duodenum in a Child. A. Dienstfertig.—p. 1017.
Thyroid Treatment of Adiposis Dolorosa. F. Reichmann.—p. 1018.
Diagnosis and Treatment of Ascariasis. T. Eickelberg.—p. 1020.
*Chronic Poisoning with Mercury. Alexander and Mendel.—p. 1021.
Treatment of Encephalitis. Lent.— p. 1022.
Alcoholic Decoction of Digitalis. E. Grahe.—p. 1022.
Eosinophilia in Case of Sepsis. E. Hachez.—p. 1022.
Survey on Psychiatry. Bostroem.—p. 1023.
Specialized or General Visiting Nurses? Paetsch.—p. 1024.
Relief Funds for German Physicians. J. Schwalbe.—p. 1024.

**Heart Treatment in Diseases of Coronary Arteries.**—Guggenheimer recommends the use of large doses of purin derivatives in patients suffering from sclerosis of the coronary arteries. The treatment is important in a stage of latent or relative insufficiency of the heart. Sometimes the heart responds to digitalis only after such preparation.

**Action of Hydrogen Ions on Blood Vessels.**—Atzler found a maximal dilatation of blood vessels when using a perfusion fluid of from 5 to 7 $p_H$.

**Determination of Lumen of Pores in Filters.**—Albert Einstein and Mühsam publish a method which allows the deter-

mination of the maximal width of pores in a filter. So far only a scale of different colloids was used for similar determinations. The size of the molecules of these substances is as good as unknown, and the adsorption is responsible also for further errors.

**Positive Wassermann Reaction During Staphylococcal Sepsis.**—Storp observed a strongly positive Wassermann reaction in a child suffering from staphylococcal septicemia. The reaction became negative when the temperature was normal.

**Chronic Mercury Poisoning from an Ointment for Freckles.**—Alexander and Mendel report the history of a woman with chronic poisoning with mercury. The patient suffered for six years from headaches, sleeplessness, pains and paresthesias in the extremities, salivation, and fine tremor of the hands. The cause was found in an ointment for freckles, which contained calomel, and which the patient had been using daily for years.

## Klinische Wochenschrift, Berlin

**2**: 1293-1340 (July 9) 1923

Orientation in Space. Köllner.—p. 1293.
*Correlation Between Organs. H. J. Hamburger.—p. 1297.
Physiologic Action of Periarterial Sympathectomy. F. Bruening and O. Stahl.—p. 1298.
*Retention of Arsphenamin in the Tissues. H. Weyl.—p. 1300.
*Reenforcing Action of Radiotherapy. György and Gottlieb.—p. 1302.
Biologic Differentiation of Proteins of Organs. K. Wolff.—p. 1304.
*Pathogenesis of Acute Roentgen-Ray Intoxication. Neuda et al.—p. 1306.
*Protein Therapy of Gastric and Duodenal Ulcers. H. Kalk.—p. 1310.
*The P Peak in the Electrocardiogram. W. von Kapff.—p. 1312.
Action of Iron. Grumme.—p. 1314.
Superinfection in Syphilis of Rabbits. J. Steinfeld.—p. 1314.
Bacteriology of the Duodenum. K. Meyer.—p. 1315. Comment. A. Weilbauer and E. Jacobsthal.—p. 1316.
"Pneumonia in Neuropathic Children." Friedjung.—p. 1316.
Test for Bile Acids in Duodenal Juice. E. C. Meyer.—p. 1317.
Claim for Priority in "Transduodenal Irrigation." Kahn.—p. 1317.
Intramolecular Breathing of Micro-Organisms. R. Bieling.—p. 1317.
Lipases in Urine. E. Bloch.—p. 1318.
Ganglion on Dorsum of Both Feet. A. Hintze.—p. 1319.
Prognosis in Puerperal Fever. R. T. v. Jaschke.—p. 1320.
Present Status of Drugs Inhibiting Sweating. R. Schoen.—p. 1322.

**Correlation Between Organs.**—Hamburger and his students investigated the action of the perfusing fluid from frogs' hearts after stimulation of nerves. The starting point for the research was O. Loewi's observation of the inhibiting action on the heart of such a fluid after stimulation of the pneumogastric. On the other hand, it increased the frequency of the heart of other frogs and inhibited the movements of the stomach, when the sympathetic, instead of the pneumogastric, had been stimulated. A fluid of this kind increases the surface tension while the "vagus fluid" decreases it. Extracts of the atrium have a "vagus effect"; extracts of the ventricles act the same as with irritation of the sympathetic. He classes these phenomena between the correlation of organs arranged by nerves, and the endocrine glands.

**Retention of Arsphenamin in the Tissues.**—Weyl wanted to test the theoretic advantages of direct injections of arsphenamin into the carotis in general paralysis, compared with intravenous infusion. His experiments on animals showed a marked difference only when silver arsphenamin was used.

**Eosin to Reenforce Radiotherapy.**—György and Gottlieb found that sensitization of rachitic children with eosin shortened the time necessary for irradiation treatment with the quartz lamp. Recovery was rapid. The spasmophilic diathesis is a contraindication.

**Pathogenesis of Acute Roentgen-Ray Intoxication.**—Neuda et al. studied especially the influence of roentgen rays on the metabolism of salt. Although the primary action seemed to concentrate on the proteins, the changes affecting the sodium chlorid content of organs and the elimination of sodium chlorid were so marked that the authors consider the empiric therapeutic use of salt in this acute roentgen-ray intoxication —the roentgenkater—as scientifically justified.

**Protein Therapy of Gastric and Duodenal Ulcers.**—Kalk did not have favorable results.

**The P Peak in the Electrocardiagrm.**—Kapff finds it necessary to make jugular tracings if the electrocardiogram does not show the P peak.

**2**: 1437-1484 (July 30) 1923

Induced Reactions of the Skin. F. von Gröer.—p. 1437. Conc'n., p. 1485.
*Periarterial Sympathectomy. M. Kappis.—p. 1441.
*Irradiation of Prodigiosus. P. S. Meyer.—p. 1446.
Diagnosis of Kidney Pelvis Disease and Calculi. Hohlweg.—p. 1447.
*Action of Purin Derivatives. Guggenheimer and Sassa.—p. 1451.
Blood Fibrinogen in Pathologic States. F. Kisch.—p. 1452.
Anatomy of Vessels of "Stomach Channel." K. Nather.—p. 1454.
Testing Diuretics on Isolated Rabbit Kidney. M. Lemesic.—p. 1455.
"Fibrinogen in Blood in Liver Diseases." W. Scheffer.—p. 1456.
Reply. Isaac-Krieger and Hiege.—p. 1457.
Acetaldehyd Formation in Organs. Neuberg and Gottschalk.—p. 1458.
Injury from Thallium Treatment of Rats. Buschke and Peiser.—p. 1458.
External and Internal Secretion of Pancreas. H. Baer.—p. 1459.
Arsphenamin Intoxication and Sensitiveness to Staphylococci. F. Rosenthal.—p. 1460.
Retention of Placenta. H. A. Dietrich.—p. 1461.
Distress of German Physicians and Pharmacists. Quaet-Faslem.—p. 1464.

**Periarterial Sympathectomy.**—Kappis saw good results of sympathectomy in some cases of ulcers and a case of retarded consolidation of a fracture of the leg. He observed a lowering of the blood pressure (10-20 mm. mercury) regularly at the time of removing the adventitia.

**Irradiation of Prodigiosus.**—Meyer found that cultures of *Bacillus prodigiosus* which have been made resistant to artificial sunlight or the arc lamp are also resistant to roentgen rays. Cultures which became resistant to roentgen rays were damaged by the other rays as much as untreated bacilli.

**Action of Purin Derivatives on the Coronary Circulation.**—Guggenheimer and Sassa found in experiments on animals a very pronounced vasodilating action of purin derivatives (caffein, etc.) on the coronary arteries.

**2**: 1485-1532 (Aug. 6) 1923

Cutaneous Reactions. F. von Gröer.—p. 1485. Conc'n.
*Secretion of Biliary Acids. Rosenthal and v. Falkenhausen.—p. 1487.
Polydipsia After Epidemic Encephalitis. Beringer and György.—p. 1493.
Vaginal Morcellation of Large Myomas. H. Sellheim.—p. 1496.
*Roentgen Irradiation of Weakly Children. Bucky and Kretschmer.—p. 1498.
*Cancer Transplantation. K. Nather.—p. 1499.
Cutaneous Reaction with Old and Moro Tuberculin. Riedel.—p. 1503.
To Increase Virulence of Saprophytic Acid-Fast Bacilli. P. Rondoni and P. G. Dal Collo.—p. 1504.
Gastroptosis. M. Bönniger.—p. 1505.
Histology of Dementia Praecox. J. Schuster.—p. 1505.
Counting Blood Platelets. I. Berger.—p. 1506.
*Vitamins in Serum. L. Gózony and E. Kramár.—p. 1506.
*Pathology and Treatment of Chloroform Anesthesia. P. Schenk.—p. 1507.
Porphyrinuria with Landry's Paralysis. L. Ehrenberg.—p. 1508.
Treatment of Sinus Affections. Vogel.—p. 1509.
Pharmacology of Uterus. M. Kochmann and A. de Veer.—p. 1513. Conc'n, p. 1560.

**Secretion of Biliary Acids in Man.**—Rosenthal and Falkenhausen found that the liver secretes bilirubin, cholesterol and biliary acids independently. In the majority of cases, the concentration of glycocholic acid in the bile is stronger than the concentration of taurocholic acid. In several cases of pernicious anemia, however, the proportion was inverted, and sometimes no glycocholic acid at all was to be found. They attribute this to the large amounts of cystin derived from the globin of destroyed erythrocytes. This leads to an increased formation of taurin, which binds almost all the available cholalic acid.

**Roentgen Irradiation of Weakly Children.**—Bucky and Kretschmer observed increase in weight in weakly children, after a roentgen irradiation with one quarter of the erythema dose. They did not repeat the irradiation until after an interval of two months, and then only if the favorable action of the first exposure was no longer noticeable. They have applied this treatment to tuberculous and other children to date, exposing the chest.

**Cancer Transplantation.**—Nather was able to grow a mouse tumor on rabbits if he repeated the injections of the emulsion of the tumor. The transplanted tumor became less virulent for mice.

**Vitamins in Serum.**—Gózony and Kramár found in serums a thermostable substance soluble in alcohol, to which they attribute an action similar to that of vitamins. It enhances the reducing power of liver cells. Fetal serum contains larger amounts of the substance than adult serum.

**Pathology and Treatment of Chloroform Anesthesia.**—Schenk points to the beneficial effect of infusion of glucose during and after chloroform anesthesia.

## Medizinische Klinik, Berlin

**19:** 1073-1106 (Aug. 5) 1923

Diagnosis and Treatment of Depressive Conditions. S. Loewenthal.—p. 1073.
Hysteria Resembling Postencephalitic Parkinsonism. Kauders.—1077.
*Syphilis as Factor in Gastric and Duodenal Ulcers. P. Tselios.—p. 1080.
Ponndorf's Scarification Tuberculin Treatment. E. Richter.—p. 1082.
*Bismuth Line on the Gums. G. Lumme.—p. 1083.
Arteriotomy in Severe Pneumonia. H. Moro.—p. 1084.
Comparison of Results of Treatment of Syphilis with Various Drugs. G. Blümener.—p. 1084.
Total Absence of Vagina and Uterus. Serdjukoff.—p. 1086.
Paralysis of Serratus After Artificial Pneumothorax. A. Müller.—p. 1086.
Hemoclastic Leukocytosis After Dermographia. W. Worms.—p. 1087.
Abuse of Social Insurance. E.Stier.—p. 1089.

**Syphilis as Factor in Gastric and Duodenal Ulcers.**—Tselios examined forty-four patients suffering from tabes and ulcers of the stomach or duodenum. He confirms the frequency of low acidity of the gastric juice in these cases. He believes that the syphilitic disease of the nerves, and not a direct affection of the stomach or duodenum, is responsible for the ulcers in these patients.

**Bismuth Line on the Gums.**—Lumme emphasizes the persistence of the bluish line on the gums due to bismuth treatment. Since this symptom betrays the diagnosis to every one who knows, he believes that bismuth should be used only exceptionally in treatment of syphilis.

**19:** 1107-1142 (Aug. 12) 1923

*Phantom Pregnancy. W. Liepmann.—p. 1107.
*Vestibular Dizziness. A. Güttich.—p. 1109.
Occult Blood in Stools. W. Baumann.—p. 1111.
Insulin Treatment of Diabetes. Umber.—p. 1115.
Disinfection of Vagina. H. Kionka.—p. 1118.
Suppuration of Costal Cartilages. C. Fürth.—p. 1122.
Treatment of Paroxysmal Tachycardia. J. Schuster.—p. 1123.
To Hold Moist Dressings in Place. B. Günther.—p. 1123.
*The Antagonists of Tuberculin Reaction. C. H. H. Spronck.—p. 1124.
Practical Gynecology. E. Runge.—p. 1127.
Present Status of Experimental Radiologic Research. H. Holfelder.—p. 1129. Conc'n, p. 1168.

**Modern Psychogenic Views in Gynecology.**—Liepmann analyzes phantom pregnancy from the standpoint of his law of the threefold substratum of the female psyche through the entire animal kingdom, namely, inhibition, vulnerability and pansexuality. It is interesting that, according to R. Kantorowicz, a similar state of phantom pregnancy can occur in female dogs, especially dwarfed ones, which have not been covered. Even the mammary glands may swell and secrete.

**Vestibular Dizziness.**—Güttich finds that all nations overestimated the importance for aviation of a healthy vestibular apparatus. Since a man who has lost it cannot get dizzy by being rotated, it would seem that such persons would be the best flyers. The most characteristic sign of vestibular vertigo is the sensation of rotation and the occurrence of attacks when the position of the head is changed. Irrigation of the ear with water of other temperature than 38 C. in otitis media may cause dizziness, which here is only a sign that the labyrinth is intact. The caloric reaction is a frequent cause of drowning: A swimmer, especially one with an open tympanic membrane, gets cold water in his ear. Nystagmus sets in, which makes optic orientation impossible. His arm and leg movements are disorganized because of the past-pointing reaction. The falling reaction, which belongs to the syndrome, carries the swimmer to the bottom of the lake or stream, where he is finally overcome by vomiting, the vomit passing into the trachea. Vestibular dizziness may be due to disease of the middle ear or of the endocranium, and to vasomotor changes, since the crista ampullaris is extremely vascular (Shambaugh). Lumbar puncture may be of therapeutic value. Small doses of quinin (0.3 to 0.6 gm. daily) help sometimes. If they do not, mercury ointment should be tried, even if the Wassermann reaction is negative.

**The Antagonists of Tuberculin Reaction.**—Spronck confirmed the presence of a substance acting like tuberculin in tuberculous tissues. He was able to transmit cutaneous allergy passively to guinea-pigs, with emulsions of such tissues. The passively sensitizing serum of guinea-pigs neutralized in vitro the cutaneous action of old tuberculin.

## Münchener medizinische Wochenschrift, Munich

**70:** 1041-1074 (Aug. 10) 1923

*Development of Otorhinolaryngology. Scheibe.—p. 1041.
Treatment of Erysipelas with Stimulating Vaccines. Koch.—p. 1044.
Treatment of Uveitis in Leprosy. O. Schnaudigel.—p. 1047.
Contrecoup Injuries of Liver and Spleen. F. J. Kaiser.—p. 1048.
*Histologic Examination of Mamma During Operation. Ladwig.—p. 1049.
Clinical Etiology and Anatomic Findings in Brain. J. Fraenckel.—p. 1050.
Blood Changes in Smallpox. W. H. Hoffmann.—p. 1052.
Pneumoperitoneum in Diagnosis of Diseases of Liver and Gallbladder. R. Nussbaum.—p. 1052.
Pneumocolon in Roentgen Diagnosis of Stomach Diseases. W. Förster.—p. 1054.
Laparoscopy and Gastroscopy. G. Kelling.—p. 1054.
Epithelial Cyst in Finger Stump. Sonntag.—p. 1055.
"Mounting Slides with Water Glass." A. Gottstein.—p. 1056.
Changing Times. E. Bruglocher.—p. 1056.
Prophylaxis of Rabies. J. Haedicke.—p. 1059.
"Advice Station for Venereal Disease." H. Schmidt.—p. 1061.

**Development of Otorhinolaryngology and the Mortality of Ear, Nose and Throat Disease.**—Scheibe deals with the development of these branches of science and is specially interested in their results. While the mortality in suppurative affections of the sinuses seems rather to increase with the progress of surgical methods, the mortality in surgery of the ear has much decreased. The most frequent causes of death are untreated cholesteatomas, and empyemas in acute otitis not diagnosed in time. He says that simple chronic suppuration in the ear is not dangerous, even if not treated at all.

**Histologic Examination of Mamma During Operation.**—Ladwig reports that exploratory excision of a fragment of a tumor of the mamma is never attempted in the Leipzig clinic (Payr) unless the sections can be examined during the operation. The radical operation, if necessary, can then follow immediately.

## Wiener klinische Wochenschrift, Vienna

**36:** 531-548 (July 26) 1923

Anatomy, Resistance and Allergy in Pulmonary Tuberculosis. H. Beitzke.—p. 531.
*Functional Elongation of the Femur. O. Frisch.—p. 535.
*Genital Organs and Metabolism. Kraul and Halter.—p. 538.
Papyraceus Fetus Palpated in the Uterus. J. Petzold.—p. 539.
*Rarity of Diabetes in Croatia. L. Thaller.—p. 541.
Standards for Physical Growth. L. Wolfer.—p. 541.

**Functional Elongation of the Femur.**—Frisch shows how to figure the abduction of the femur which is required to compensate shortening of the femur in cases with ankylosis of the hip joint. Oblique resection and extension alone are not sufficient.

**Influence of Female Genital Organs on Basal Metabolism.**—Kraul and Halter found in four women a lowering of 17-30 per cent. of the basal metabolism rate after castration by roentgen rays. Patients with uterine fibroids averaged 30 per cent. above normal. Hysterectomy lowered the increased rate in six cases.

**Rarity of Diabetes in Croatia.**—Thaller points to extraordinary rarity of diabetes among Croatian peasants, which he attributes to the diet (little meat and little beer).

**36:** 549-566 (Aug. 2) 1923

*Tuberculosis as Disease of Systems. E. Löwenstein.—p. 549.
*Oligodynamic Action of Metals. P. Saxl.—p. 551.
Typhoid Meningism. A. v. Torday.—p. 553.
"Injury of Tendons." L. Kirchmayr.—p. 555.
Resorption of Sulphur Compounds from Thermal Springs in Baden. E. Maliwa.—p. 555.

**Tuberculosis as a Disease of Systems of Organs.**—Löwenstein injected guinea-pigs subcutaneously in the paw with tubercle bacilli. An amputation performed one hour after the injection did not save the animal. Injections into a scar were also followed by a generalization of the process when amputated after twenty-four hours. He concludes, therefore, that in man the process starts also early as a bacillemia. His attention was drawn to the fact that tuberculosis in about 90 per cent. of the cases affects only one system (lungs, bones, skin, eyes, kidneys), but that it has a tendency to affect the

whole system. For instance, the affection of one kidney is followed by infection of the other unless the first is extirpated in time. He injected bacilli in one eye of a rabbit. A subcutaneous injection of bacilli one year later was invariably followed by localization in the other eye. Infection of a kidney in guinea-pigs gave analogous results in spite of the rarity of spontaneous tuberculous nephritis in these animals. He considers these phenomena as analogous to sympathetic ophthalmia. Striated muscles are immune to tuberculosis, though they contain bacilli.

**Oligodynamic Action of Metals and Their Salts.**—Saxl finds that the disappearance of oligodynamic action of metals by heating and other procedures and its reappearance in weak acids, exposed to the air, cannot be explained by the supposition that salts are responsible for the action. The disinfecting power of water, in which a silver wire has been kept, is much greater than it would be proportionally to the amount of silver dissolved.

## Zeitschrift für urologische Chirurgie, Berlin

**13:** 197-258 (Aug. 23) 1923

*Sequestrum of Bone in Bladder. L. Löffler.—p. 197.
Epithelial Tumors in Bladder. Joseph and Schwarz.—p. 203.
*Postoperative Reflex Anuria. E. Haim.—p. 227.
*Functional Tests of the Kidneys in Surgery. Rehn.—p. 230.

**Bone Sequestrum in Bladder.**—The sequestrum was from caries of the symphysis, and after clearing out the tuberculous bone process, removing the sequestrum, resecting the fistula, and suturing the bladder, recovery was smooth and complete. Löffler has been able to find only eight published cases of caries of the symphysis. The sequestrum in his case projected into the bladder but it plugged completely the hole it had made.

**Reflex Anuria After Operations.**—Haim gave a potent diuretic by the vein in the one case reported. The anuria had followed removal of a uterine cancer involving the vagina. The urine began to dribble two minutes after the intravenous injection; it had been preceded by withdrawal of 50 gm. of blood (dark colored) by venesection.

**Tests of Kidney Functioning in Surgery.**—Rehn argues that the functional capacity of the kidney can be estimated only by taking into account at the same time the interchanges between the blood and the tissues. Any changes in the isoionia of the blood serum (the quantitative constancy of the ions forming the urine salts) and the isotonia (the regulation of the osmotic pressure) are reflected at once in the urine. On the other hand, any changes in the kidney are reflected in the isoionia and the isotonia. To test them he gives first an acid by the mouth, and then an alkali by the vein. In the morning the fasting patient drinks 20 drops of hydrochloric acid in 300 c.c. of water, and the urine from each ureter is tested for the hydrogen ion concentration. Two hours later, 50 c.c. of a 4 per cent. solution of sodium bicarbonate is injected by the vein, and the hydrogen ion concentration is tested from the third minute at brief intervals up to seven minutes or longer. When the *p*H has reached 7 or more, the Voelcker indigo carmin test can be instructively applied. Rehn's application of this double test in 170 cases has proved very instructive. Five different types of responses were obtained in kidney disease by this S U A test, as he calls it. The reagents used are not foreign to the organism, and comparison of the response from each ureter reveals disturbances in kidney function which escape the ordinary tests.

## Zentralblatt für Chirurgie, Leipzig

**50:** 1233-1264 (Aug. 11) 1923

Peptic Ulcer After Billroth II. Breitner.—p. 1234.
*Duodenal Stenosis with Gastric Ulcer. H. Zoepffel.—p. 1235.
Gastric Peristalsis and Peptic Ulcer. F. Linde.—p. 1238.
Pendulous Mammae and Plastic Treatment. F. Lotsch.—p. 1241.
*Sacrolumbar Anesthesia. R. Rodzinski.—p. 1249.

**Factors Affecting Choice of Billroth II or Billroth I.**—Zoepffel discusses his personal experiences in approximately 300 resections of the stomach for ulcer, forty-five of which were carried out according to Billroth I. A peptic jejunal ulcer developing after a Billroth II operation would appear to be extremely rare, as he has not encountered a case, although he has seen several cases resulting from other operative methods. Operation on a recurring ulcer at the line of suture, following a Billroth I operation, is not easier than an operation on a peptic jejunal ulcer. Such recurrent ulcers have been observed by Wydler, Finsterer, Enderlen, Hotz and others. These factors: the greater difficulty of the operation according to Billroth I; the disturbances during the postoperative period; the possibilities of a recurrence or of stenosis due to adhesions, and the simultaneous occurrence of more or less serious duodenal stenosis from arteriomesenteric occlusion, have led Zoepffel to abandon the Billroth I for the Billroth II method of operation.

**Sacrolumbar Anesthesia.**—Rodzinski used sacrolumbar anesthesia for more than a year in operations on the lower extremities and lower abdomen. The method consists in the simultaneous intradural and extradural injection of small doses of procain. The extent and duration of the anesthesia are the same as when large doses are injected into only one of these spaces. In other words, they accomplish the same results as high sacral or intraspinal anesthesia, without exposing the patient to the dangers of these two methods. He injects from 4 to 5 c.c. of a 1 per cent. procain solution intradurally and from 40 to 50 c.c. extradurally. In 200 operations there were three failures, possibly due to technical error. Slight headaches occurred in 8 per cent. of the cases. It is important that the anesthetic be introduced first into the extradural space and later into the dural sac.

## Zentralblatt für Gynäkologie, Leipzig

**47:** 1281-1312 (Aug. 11) 1923

*Uterus Duplex. H. Eymer.—p. 1281.
*Calcium in Climacteric Hemorrhages. Hornung.—p. 1285.
Hemeralopia of Pregnancy. E. Klaften.—p. 1288.
Sedimentation Test in Gynecology. Geppert.—p. 1292.
*Echinococcus of Ovary and Tube. Gross and S. Keszly.—p. 1292.

**Symptomatology and Treatment of So-Called Uterus Duplex.**—Eymer reports two cases in which he united the two halves, constructing a uterus of anatomically normal appearance. In one case there was a uterus bicornis uniforis and in the other a uterus bicornis septus bicollis. One patient was relieved, through the operation, of her pains and the other of her hemorrhages, so that Eymer feels that, if other measures fail, his method, which he describes with more or less detail, is justifiable. Only seventeen similar cases are reported in the literature, he finds.

**Calcium Medication in Climacteric Hemorrhages.**—Hornung's experiments were undertaken with the idea of ascertaining whether changes in the coagulation mechanism brought about by dysfunctioning of the ovaries might be concerned in climacteric hemorrhages. He gave the patients 10 c.c. of a 10 per cent. calcium chlorid solution intravenously and noted in all cases, after twenty-four hours at the most, a diminution, frequently pronounced, of the blood platelets. The greatest drop was from 224,000 to 70,770. In 80 per cent. of the cases, after the first or second injection of calcium, the hemorrhages were completely checked. There was failure to act in only 8 per cent. of the cases.

**Echinococcosis of Ovary and Tube.**—Gross and Keszly report what they believe to be the first recorded case of echinococcus disease of the ovary and tube. "Ovarian cyst" was the diagnosis. As the removal of all the numerous hydatid cysts was technically impossible, the abdomen was closed. Schultze published a case of echinococcosis of the ovary and Doléris a case in which numerous cysts were found

in the tubes, but this is the first reported case in which both ovary and tube were involved.

## Casopis lekaruv ceskych, Prague

**62:** 613-640 (June 9) 1923

*Chorio-Epithelioma. F. Horalek.—p. 613.
*Hemolytic Serum in Animals. Kabrhel and Kredba.—p. 621. Conc'n.
Clinical Calorimetry. V. Laufberger.—p. 624. Conc'n, p. 652.

**Chorio-Epithelioma.**—Horalek describes two cases of chorio-epithelioma. He believes that these tumors are due to a lack of resistance of the organism against chorionic cells. Abderhalden's reaction was negative. He tried infusion of 200-300 c.c. of serum from retroplacental hematomas of healthy women every three days, and attributes the necrosis of a metastatic tumor to this treatment.

**Decrease of Hemolytic Titer of Serum in Immunized Animals.**—Kabrhel and Kredba examined the spontaneous decrease of high hemolytic titers in rabbits immunized with sheep corpuscles. They found that the process obeys a law which can be expressed by the formula $y = a + bx^n$.

**62:** 641-668 (June 16) 1923

*Submucous Fissure of Palate. M. Seemann.—p. 641.
Köhler's Disease. S. Roubal.—p. 646.
Multiple Progressive Ossifying Myositis. M. Stejfa.—p. 650.

**Submucous Fissure of Palate.**—Seemann recommends digital examination of the hard palate in patients with rhinolalia aperta and apparently normal soft palate. The treatment consists only in vocal exercises. Removal of adenoids makes the condition worse.

**62:** 669-696 (June 23) 1923

*Diagnostic Importance of Smelling. J. Thomayer.—p. 669.
Deep Pustuliform Keratitis. E. Vasek.—p. 674.
Barlow's Disease. L. Kucera.—p. 677.

**Diagnostic Importance of Smelling.**—Thomayer deals with the importance of odors for diagnosis. In old times, some physicians were able to diagnose exanthematic diseases simply by smelling.

**62:** 846-868 (Aug. 11) 1923

Echinococcus in Thyroid and Gallbladder. Maydl.—p. 846.
*Hemolytic Anemia. L. Kucera.—p. 850.
*Action of Surface Tension on Regeneration. E. Vejnarova.—p. 852.
Thymus and Surgery. Rys.—p. 854.

**Hemolytic Anemia.**—Kucera reports the history of an atypical case of severe anemia in a child, aged 12. The anemia was of the hemolytic type, and probably of infectious origin. The child recovered on a diet containing plenty of vitamins without addition of arsenic or iron.

**Action of Surface Tension on Regeneration.**—Vejnarova observed the regeneration of *Triton taeniatus* kept in water with addition of sodium taurocholate, glycocholate or quinin sulphate. She found that the more the surface tension was lowered, the faster the regeneration progressed. Quinin caused in addition atypical mitosis of cells.

## Acta Chirurgica Scandinavica, Stockholm

**56:** 103-206 (Sept. 4) 1923

*Pathogenesis of Gallstones. T. Rovsing.—p. 103.
A Case of Simultaneous Luxation of Both Ends of the Clavicle. T. Beckman.—p. 156.
Fate of Bone Transplants. E. Lexer.—p. 164.
*Volvulus of the Cecum. H. Jacobsen.—p. 181.

**Pathogenesis of Cholelithiasis.**—Rovsing criticizes the various theories that have been proposed to explain the production of gallstones. He has cultivated *Streptococcus pyogenes* in pure cultures in 28 cases and *Staphylococcus aureus* in 36. His experience has demonstrated that there is no infection in the majority of operative cases, and, further, that all the different kinds of gallstones seem to behave alike whether there is or is not infection. He found a single calculus in 84 operative cases; multiple gallstones were discovered in 442 cases, and gravel in 27. In 4 the gravel was alone. In 15.8 per cent. he found from 100 to 600 calculi, up to 1,000 and 4,000. He comments on the fact that multiple calculi are generally nearly all of the same size, as if they had all been produced at one time and in the same manner. The article is continued, but the data presented demolish Naunyn's theory of the indispensability of infection and stagnation in the gallbladder. Rovsing's bacteriologic study of 530 gallstone cases showed the bile sterile in 60 per cent. Only in respect to typhoid was Naunyn's theory confirmed. Typhoid bacilli are inclined to lurk in the gallbladder, and there are generally gallstones in such cases, but Rovsing believes that the irritation from the preexisting gallstone offers the typhoid bacilli a lurking place; not that the bacilli precede the formation of the stones. This has been demonstrated, he says, by the fact that merely removing the gallstones frees the subject from being a typhoid bacilli carrier. (In German.)

**Volvulus of the Cecum.**—Jacobsen advises appendicostomy if the intestine is slightly affected, and difficult to empty after untwisting. It may be advisable to fasten it to prevent recurrence of the volvulus. The slightest suspicion of gangrene calls for resection; if necessary, in several sittings. In the eight personal cases described, with illustrations, the volvulus returned two months later in one of his cases and in two weeks in one of Rovsing's. (In French.)

## Hospitalstidende, Copenhagen

**66:** 541-556 (Aug. 1) 1923

*Light in Experimental Rickets. P. Schultzer and C. Sonne.—p. 541.
*Experimental Multiple Sclerosis. E. Jarløv and E. Rud.—p. 553.

**Prophylactic Action of Light in Experimental Rickets.**—Schultzer and Sonne present a preliminary report on their success in warding off rickets in rats by exposing them to ultraviolet rays. All the rats developed rickets on the McCollum scurvy diet No. 3,143. The rickets was manifest in three weeks, and was pronounced in four when the rats had been kept in the dark; but there were no signs of rickets in the rats that had been exposed daily for fifteen minutes to the mercury vapor lamp. The phosphorus content of the serum was normal. Exposures limited to five minutes protected to some extent, but not completely. They noted further that the protection afforded by the light was less effectual in black than in lighter colored rats. The effective ultraviolet rays seemed to be those with wave lengths between 400 and 280 millimicrons. Even exposure for one minute, daily, had some influence. Sunlight and carbon arc light have a decided action, but the mercury vapor lamp is more potent in rickets. The reverse is the case in bone and joint tuberculosis; this requires prolonged mild treatment, and sunlight and carbon arc light are more effectual. It is not certain which rays are potent in tuberculosis.

**Transmission of Multiple Sclerosis to Guinea-Pigs.**—Jarløv and Rud say that a "right interesting" clinical picture developed in the seventeen animals after they had been injected intraperitoneally with blood or serum or spinal fluid from a woman with typical sclerosis in patches. She had been healthy until 1920. The disease in the animals ran a more rapid and a severer course.

## Hygiea, Stockholm

**85:** 657-704 (Aug. 31) 1923

*Sedimentation Test in Surgical Cases. K. Hallberg.—p. 675.
History of Gold in Treatment of Syphilis. J. Almkvist.—p. 682.
The American System of Diet and Insulin Treatment of Diabetes. R. Roman.—p. 689.

**Speed of Sedimentation of Erythrocytes in Surgical Cases.**—Hallberg applied the sedimentation test 190 times in 100 laparotomy and thyroidectomy cases. His tables show that the Fåhræus reaction is a more sensitive and reliable index of the severity of the process than the temperature. The figures were practically normal in ileus and hernia, but ran up high in infectious processes. The highest figure, 106 mm., was in a case of cancer of the jaw. In acute appendicitis it was 32 mm. in one case in which neither the temperature nor the general condition seemed grave, but the operation revealed a perforated appendix with abscess. One chart shows the decline of the figure during convalescence after operation. But there was always a rise after an operation under general anesthesia, reaching its height the second, third or fourth day, and then declining to reach the normal figure about the twenty-second day. The rise was insignificant under local anesthesia, and under general anesthesia for reduction of fractures, without cutting.